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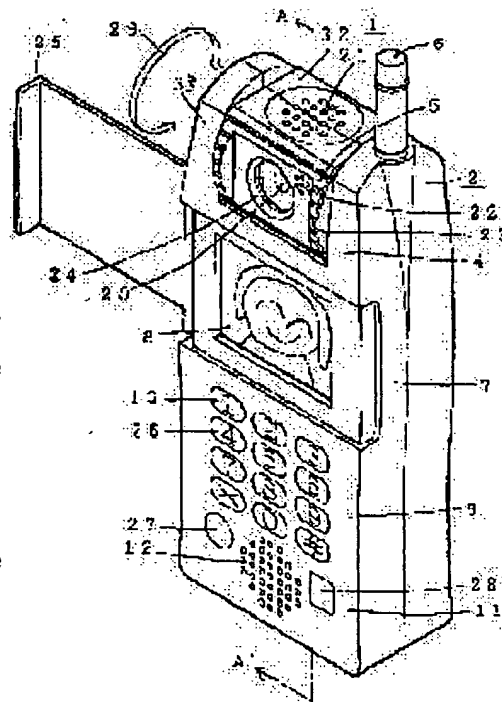
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(54) VIDEO CAMERA INTEGRATED WITH PORTABLE TELEPHONE SET

(57)Abstract:

PURPOSE: To allow a video camera to be used by both a hand-free video telephone set and a handset telephone set while fingerprint and adhesion of dust are prevented.

CONSTITUTION: A transparent cover 25 is journaled by a casing main body 2 to cover a video camera section 20 or a video display section 8. Furthermore, a camera case 5 with a video input means (video camera section) 20, an ear speaker 21 and a microphone 22 mounted integrally above the casing main body 2 is journaled with a shaft (tilted). The video camera with portable telephone set is configured by arranging the video display section 8 to a breast 7 of the casing main body 2, an operation button 10 to a waste 9, and a dynamic acoustic converter 12 to a lower part 11. The video input means 20 and the ear speaker 21 are arranged on sides turned nearly by 90° mutually and when the ear speaker 21 is in use (in the operating state as a handset telephone set), the video input means 20 is detoured the inside



of the casing main body 2.

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CLAIMS

[Claim(s)]

[Claim 1] It is the cellular-phone one apparatus video camera with which a case comes to establish a loading portion of the graphic display section a wrap electric shielding means at least in a cellular-phone one apparatus video camera which carried in a case the video camera section which consists of a lens and an image sensor, the graphic display section, and a cellular-phone function part which carries out the wireless transmission and reception of the message signal of a telephone, enabling free closing motion.

[Claim 2] An electric shielding means is a cellular-phone one apparatus video camera according to claim 1 which it comes to consist of transparent materials.

[Claim 3] In a cellular-phone one apparatus video camera which carried in a case the video camera section which consists of a lens and an image sensor, the graphic display section, and a cellular-phone function part which carries out the wireless transmission and reception of the message signal of a telephone The 1st case with which a case carries a loudspeaker of the video camera section and a cellular-phone function part, While it has the 2nd case carrying a microphone of the graphic display section and a cellular-phone function part and the 1st case is supported to revolve by the 2nd case pivotable centering on a horizontal axis of the 2nd case A loudspeaker of the video camera section carried in the 1st case and a cellular-phone function part is a cellular-phone one apparatus video camera which it comes to arrange mutually in a location which carries out an abbreviation rectangular cross.

[Claim 4] It is the cellular-phone one apparatus video camera according to claim 3 which a cellular-phone function part has the 1st and the 2nd loudspeaker, and axial support of the 1st loudspeaker is carried out pivotable in the 1st case with the video camera section, and comes to arrange the 2nd loudspeaker to a lower limit of the 2nd case.

[Claim 5] The 2nd loudspeaker is a cellular-phone one apparatus video camera according to claim 4 which is an electrodynamic acoustic transducer.

[Claim 6] It is the cellular-phone one apparatus video camera according to claim 3 which is the 2nd inclined plane and **** inclined plane of a supporter of a case near [in which a supporter of the 2nd case which supports the 1st case has an inclined plane of 1 time thru/or 10 degrees, and the 1st loudspeaker of the 1st case was carried] the external surface.

[Claim 7] A cellular-phone function part is a cellular-phone one apparatus video camera according to claim 1 which has the 1st, the 2nd loudspeaker, the 1st, and the 2nd microphone, arranges the 1st loudspeaker and 1st microphone of a cellular-phone function part to a screen side of the graphic display section of a case, and comes to arrange the 2nd loudspeaker and 2nd microphone of a cellular-phone function part to the screen and the opposite side of the graphic display section of a case.

[Claim 8] In a cellular-phone one apparatus video camera which carried in a case the video camera section which consists of a lens and an image sensor, the graphic display section, a cellular-phone function part which carries out the wireless transmission and reception of the message signal of a telephone, a control unit, and a dc-battery A top case with which a case carries a loudspeaker and a microphone of the video camera section, the graphic display section, and a cellular-phone function part, It is the cellular-phone one apparatus video camera which superimposes the video camera section and

the graphic display section on a bottom case when a top case is rotated and it blockades, while consisting of a bottom case carrying a control unit and a dc-battery and connecting a top case and a bottom case mutually rotatable.

[Claim 9] A bottom case is a cellular-phone one apparatus video camera according to claim 8 used as susceptor of the video camera section carried in a top case.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the video camera which carries out the wireless transmission and reception of the image photoed especially in the video camera section using a cellular-phone function about the cellular-phone one apparatus video camera which carried in the case the video camera section which consists of a lens and an image sensor, the graphic display section, and the cellular-phone function part which carries out the wireless transmission and reception of the message signal of a telephone.

[0002]

[Description of the Prior Art] As this kind of a cellular-phone one apparatus video camera, there is "an electronic "still" camera with a cellular-phone function" currently indicated by JP,6-133081,A conventionally. By constituting the image which carried the cellular-phone function and was photoed to the digital electronic "still" camera possible [electrical transmission to the large-sized storage which is immediately in somewhere else using the telephone line], the configuration of the camera currently indicated has improved the sex instancy and has followed up the little (storage capacity is small) of the storage number of sheets of memory card. This camera has arranged the loudspeaker, the display, the dial control unit, and the microphone in the front face of a case, and arranged the lens and the antenna on the head side of a case.

[0003]

[Problem(s) to be Solved by the Invention] The lens which are some video cameras is fixing and arranging the above-mentioned conventional example in the case side, and the display which should serve as a finder is also the same, it is fixed to the front face of a case, and both are stationed mostly at the rectangular condition. For this reason, when using it as a handsfree telephone set which talks over the telephone while looking at a display, a sender's face could not be copied and consideration in the case of using it as a TV phone was not carried out. Moreover, since a loudspeaker and a display were on the same field of a case when using it as a usual hand-set telephone, when the ear was forced on the loudspeaker, the cheek contacted the display, the display side became dirty with the fats and oils of a cheek, and un-arranging [which causes image quality deterioration] arose.

[0004] Then, this invention offers the cellular-phone one apparatus video camera which can transmit and receive the clear image which image quality deterioration does not produce, when using it as a handsfree telephone set, and a sender's face can be copied and it uses it as a hand-set telephone set.

[0005]

[Means for Solving the Problem] In order to solve a technical problem of the above-mentioned conventional example, the video camera section which consists of a lens and an image sensor, the graphic display section, and a cellular-phone function part which carries out the wireless transmission and reception of the message signal of a telephone (a loudspeaker and microphone) are carried in a case, and a configuration which enables axial support of the closing motion of a wrap electric shielding means (it constitutes from a transparent material) of the graphic display section at a case is provided at least.

Moreover, it has the 1st case and the graphic display section which arrange and carry a loudspeaker of the video camera section and a cellular-phone function part in an abbreviation rectangular cross condition, and the 2nd case carrying a microphone, and the 1st case possesses a configuration supported to revolve pivotable centering on a horizontal axis of the 2nd case. Furthermore, you build two loudspeakers in a case and the 1st loudspeaker makes it rotate in one with the video camera section. A configuration which constitutes the 2nd loudspeaker from an electrodynamic acoustic transducer, and is arranged to a lower limit of a case, Moreover, a configuration which is the inclined plane whose loudspeaker loading sides of the 1st case are 1 time thru/or 10 degrees, The 1st loudspeaker or 1st microphone of a cellular-phone function part is arranged to a field in which the graphic display section of a case was carried, and a configuration which arranges the 2nd loudspeaker and 2nd microphone of a cellular-phone function part to a field in which the graphic display section was carried, and a field of the opposite side is provided.

[0006] Furthermore, it constitutes from a top case which has the video camera section and the graphic display section for a case, and a bottom case which has a control unit and a dc-battery, and a top case and a bottom case possess a configuration connected rotatable by hinge region.

[0007]

[Function] The electric shielding means supported by the case possible [closing motion] prevents adhesion of a cover, a fingerprint, and dust for the graphic display section at least, and the electric shielding means of transparence makes closing motion of covering unnecessary at the check of the contents of a display of images, such as the telephone number. since the ear receiver (loudspeaker) of the video camera section and a cellular phone function part be arrange by the 1st case in the abbreviation rectangular cross condition and axial support be carry out pivotable the center [the horizontal axis of the 2nd case] at it , when using a cellular phone one apparatus video camera as a hand set mold telephone set (operation which made the main part approach a head) , it prevent rotating the video camera section inside a case , covering a lens with a case , and a lens becoming dirty from the fats and oils of the hair . The electrodynamic acoustic transducer formed in the case lower limit acts as a sound collector (microphone), when using it as a hand-set mold telephone set, and on the other hand, in the case of the handsfree telephone set which separates a case from a head and uses it, this electrodynamic acoustic transducer acts as a vocal apparatus (loudspeaker).

[0008] Moreover, the loudspeaker section contacts an earlobe extensively along the inclination of a user's head, and the inclined plane of 1 time thru/or 10 degrees of the front rising wood of a case prevents the leakage of the sound from a loudspeaker, when it uses as a hand-set mold telephone set. When using it as a hand-set mold telephone set, the loudspeaker and microphone of a cellular-phone function part which have been arranged to the field in which the graphic display section of a case was carried, and the field of the opposite side prevent the dirt of the video camera section by the hair of hair, or the fats and oils of a cheek, or the graphic display section, and prevent deterioration of the control unit by the breath breathe out.

[0009] By folding up, the top case and bottom case which were combined mutually pivotable are that of a wrap in a bottom case about the video camera section and the graphic display section of a top case, and while protecting the video camera section and the graphic display section from adhesion of dust, a bottom case serves as susceptor of the video camera section.

[0010]

[Example] The example of this invention is explained in full detail with reference to a drawing. 1st example drawing 1 shows the whole perspective diagram showing the front face of a case of the cellular-phone one apparatus video camera of this example, and, as for drawing 5 , drawing 2 shows the whole condition from the A-A' cross section of drawing 1 , and drawing 3 , as for drawing 6 to the drawing of a busy condition, and drawing 8 . The cellular-phone one apparatus video camera 1 consists of the camera head section 20 carried in a case and a case, the liquid crystal display section 8, a telephone function part, etc. A case has the main part 2 of a case which is the 2nd case, and the camera case 5 which is the 1st case. The main part 2 of a case consists of the rising wood 4 in which an antenna 6 is attached, the case thorax 7 in which the liquid crystal display section 8 is carried, the case lumbar

part 9 which arranges a manual operation button 10, and the case lower part 11 in which the electric type-conversion machine 12 is carried, and carries out sequential arrangement from rising wood 4 to the case lower part 11. The front face 33 of case rising wood 4 is made to incline with the inclination of an angle θ . In this example, it may be $\theta = 5$ times. The manual operation button 10 of the case lumbar part 9 serves as the ten keys 26 from 0 to 9 for inputting the telephone number from the feature buttons 27 and 28, such as dispatch and termination. Inside [13] the main part 2 of a case, the telephone set substrate 14, the liquid crystal display substrate 15, and the video camera substrate 16 grade are arranged. Furthermore, a dc-battery 18 is built in the case lower limit posterior part 17, and it is covered with the dc-battery covering 19. Rising wood 4 forms a cavity in a part for a center section, and arranges the camera case 5. The camera case 5 fits into a part for the cavity of the rising wood 7 of the main part 2 of a case, and is arranged free [rotation].

[0011] The camera hole 24 is punched at the whole surface, and the camera case 5 carries the year loudspeaker 21 and a microphone 22 in the camera case 5 while arranging in the interior corresponding to the camera hole 24 the camera head section 20 which consists of a lens, an image sensor, etc. When the camera head section 20 has been arranged in camera hole 24 location used as the same field as a liquid crystal display 8, the year loudspeaker 21 is arranged in the location used as the field of the case rising wood 4 which arranges an antenna 6, and the same upper surface. That is, the arrangement side of the camera head section 20 and the arrangement side 32 of the year loudspeaker 21 intersect perpendicularly. In this example, a microphone 22 is arranged to the same field as the camera head section 20.

[0012] The arrangement side 32 of the year loudspeaker 21 is made to incline with the inclination of an angle θ . Case rising wood 4 front face is cut so that it may become flat-tapped with the year loudspeaker arrangement side 32, and few [the sound hole 34 neighborhood] depressions 35 are attached. That is, when the camera case 5 is rotated and the arrangement side 32 of the year loudspeaker 21 turns into the front face 3 of the main part 2 of a case, the front face of the rising wood 4 of the main part 2 of a case and the arrangement side 32 of the year loudspeaker 21 of the camera case 5 turn into the same inclined plane. θ is doubled with one angle of the earlobe and cheek which have been projected from the head thru/or 10 degrees in a body head whenever [this tilt-angle]. Since the arrangement side 32 of the year loudspeaker 21 agrees in the protrusion side of an earlobe and a cheek, the display covering 25 neighborhood contacts a cheek and the year loudspeaker 21 and an earlobe stick whenever [this tilt-angle] when using the cellular-phone one apparatus video camera 1 as a portable telephone, the leakage of the voice from the year loudspeaker 21 is reduced.

[0013] Moreover, as the whole main part 2 configuration of a case is shown in drawing 7, the case rising wood 4 in which the camera case 5 is arranged forms a loose radius of circle, and narrows. The case thorax 7 by which the display 8 has been arranged uses a part for a center section as the fuselage which gave the loose swelling, and the case lumbar part 9 by which the manual operation button 10 has been arranged forms a loose radius of circle, and narrows, and it makes the configuration of breadth the case lower part 11 by which the electrodynamic type converter 12 has been arranged at last. When using it as a portable telephone, it is easy to have this whole configuration, and it is not slipped down from in its hands. The knurling tool 23 for skids in the surface of the camera case 5 is carved. The electrodynamic type converter 12 is reversible equipment which a voice coil vibrates within the magnetic gap of a permanent magnet, a voice coil and the diaphragm of one will shake air and will become a loudspeaker if it consists of a diaphragm, a voice coil, and a permanent magnet and speech current is passed to a voice coil, speech current will utter to a voice coil if a diaphragm vibrates and a voice coil crosses a magnetic field within a magnetic gap with voice on the contrary, and serves as a microphone. The camera case 5 is supported to revolve in 270 degrees pivotable in the arrow head 29 direction with the liquid crystal display 8 in the rising wood 4 of the main part 2 of a case by setting the axis of rotation as a shaft parallel to horizontally it becomes settled uniquely.

[0014] In order to rotate the camera case 5 to the main part 2 of a case, the main part 2 of a case is supported with the left hand, and a liquid crystal display 8 is held at a legible angle, and by the right thumb and a right forefinger, it pinches camera case 5, and rotates, and whenever [angle-of-coverage /

of the camera head section 20] is set up. At this time, the knurling tool 23 of the camera case 5 acts a skid to rotation actuation. In the front face of the liquid crystal display 8 of the main part 2 of a case, the display covering 25 which can be opened and closed is supported to revolve pivotable by the main part 2 of a case. The display covering 25 is the transparent body, and after the display of a liquid crystal display 8 has carried out covering 25, it can be seen.

[0015] Thus, actuation of the cellular-phone one apparatus video camera 1 to constitute is explained.

(1) Use the cellular-phone one apparatus video camera 1 as a handsfree telephone set (refer to drawing 1). The camera case 5 is rotated and the camera head section 20 is turned to the front face 3 of a case. The display covering 25 can be opened so that the liquid crystal display 8 arranged in the front face 3 of a case can be faced squarely. A photograph is taken acting as the monitor of the photographic subject which exists in the operator [of the cellular-phone one apparatus video camera 1], or front-face 3 side of a case in the camera head section 20 with a liquid crystal display 8. The voice of a user's (photography person) etc. photographic subject collects a sound from the microphone phone 22 which adjoins the camera head section 20. On the other hand, the voice of the partner received by the cellular-phone function is reproduced from the electrodynamic type converter 12 arranged at the case lower part 11. In this case, the year loudspeaker 21 prepared in the camera case 5 shall not operate. The image of the side here which is going to transmit to a liquid crystal display 8 the image of the received partner and after this is displayed, and it can talk over the telephone, looking at an image.

[0016] (2) Use as video cameras in the case of photoing the photographic subject which exists behind the cellular-phone one apparatus video camera 1 etc. (refer to drawing 3 and drawing 4). When photoing the photographic subject which exists behind the cellular-phone one apparatus video camera 1, the camera case 5 is rotated in the arrow head 29 direction, and the camera head section 20 is turned to the case back 30. In this case, a liquid crystal display 8 acts as an electronic view finder. A user photos the photographic subject which exists behind a video camera 1, acting as a monitor with a liquid crystal display 8.

[0017] (3) Use the cellular-phone one apparatus video camera 1 as a hand-set mold portable telephone (refer to drawing 5 , drawing 6 , and drawing 7). The camera case 5 is rotated and let the year loudspeaker arrangement side 32 of the camera case 5 be the front face 3 of a case. At this time, the camera head section 20 serves as the inside of the main part 2 of a case, and the photography hole 24 hides in the interior 13 of a case. Therefore, fats and oils adhere and the photography hole 24 is protected from the main part 2 of a case serving as covering, a lens being protected, the hair contacting the lens of the camera head section 20, and dust adhering. Moreover, the power supply of the camera head section 20 is considered as the configuration cut automatically at this time. A liquid crystal display 8 closes and protects the display covering 25. The front face 33 of a case upper limb inclines with the inclination of an angle θ . In this example, it is $\theta = 5$ times. This is what doubled the 21st page of a loudspeaker with one angle of the earlobe and cheek which have been projected from the head thru/or 10 degrees, and the display covering 25 neighborhood contacts a cheek, the year loudspeaker 21 and an earlobe stick it, and he is trying to reduce the leakage of the voice from the year loudspeaker 21. The year loudspeaker arrangement side 32 is a plane omitted so that it might become flat-tapped with the front face 33 of a case upper limb, and few [the sound hole 34 neighborhood] depressions 35 are attached.

[0018] In the rising wood 4 of the camera case 5 with which the year loudspeaker 21 has been arranged, the main part 2 of a case of this example narrows. Since the case lower part 11 by which the case thorax 7 by which the display 8 has been arranged swelled, the case lumbar part 9 by which the manual operation button 10 has been arranged narrowed, and the electrodynamic type converter 12 has been arranged is made into the configuration of breadth at last If it has the case lumbar part 9 by hand, although a thorax 7 will lay on a hand and a hand will loosen, there is little risk of dropping the cellular-phone one apparatus video camera 1, and the safety of a pocket device improves. Moreover, the case lower part 11 of breadth has falling [little], since stability is well stable when the cellular-phone one apparatus video camera 1 is placed on a desk at last.

[0019] The whole cellular-phone one apparatus video camera 101 perspective diagram [in / in 2nd

example drawing 8 / this example] and drawing 9 are [rear view and drawing 11 of explanatory drawing of operation and drawing 10] drawing 10 line D-D' cross sections. In the front face 103 of the case 102 of the cellular-phone one apparatus video camera 101, a liquid crystal display 104, the camera head section 105, the 1st loudspeaker 106, the 1st microphone 107, the manual operation button 108, and the front cover 109 are arranged. The antenna 111 is arranged in the rising wood 110 of a case 102. The front cover 109 has covered a liquid crystal display 104, the camera head section 105, the 1st loudspeaker 106, and the 1st microphone 107. Axial support is carried out pivotable to the rising wood of a case 102 through the hinge 112, and a front cover 109 is taken as the configuration which can be held where a front cover 109 is extended. The front cover 109 consists of transparent materials, and also where a front cover 109 is shut, it can read the contents of an input of a feature button 108. A manual operation button 108 consists of a ten key 113, a top feature button 114, and a bottom feature button 115. The top feature button 114 has functions, such as memory, silence, and an identifier, and the bottom feature button 115 has functions, such as dispatch, a call, and termination.

[0020] The manual operation button 108, the cellular-phone substrate 121, the microphone 118, and the dc-battery (not shown) are arranged at the liquid crystal display 104 constituted from the liquid crystal panel 124 and back light 125 of a transparency mold by the camera head section 105 and the year loudspeaker 117, and pars intermedia from a upside antenna 111 arrangement portion inside [120] the case of the cellular-phone one apparatus video camera 101, the liquid crystal display substrate 122 and the video camera substrate 123, and the lower part. It is fixed to the case 102 and does not carry out movable [of the video camera section 105].

[0021] Drawing 9 shows the condition of having extended the front cover 109. When using it as a cellular phone of the handsfree mold which detaches and uses the cellular-phone one apparatus video camera 101 from a face, the voice input to the 1st microphone 106 and the voice output from the 1st loudspeaker 106 are possible by open Lycium chinense in a front cover 109. Moreover, a liquid crystal display 104 can be squarely faced without deterioration of image quality, without penetrating a front cover 109. Thus, as shown in the back of the cellular-phone one apparatus video camera 101 to constitute at drawing 10, the 2nd year loudspeaker 117, microphone 118, and dc-battery covering 119 are arranged at the case back 116. [2nd] When using this cellular-phone one apparatus video camera 101 as a cellular phone of a hand-set mold, an ear is applied for the 2nd year loudspeaker 117 on the back 116 of a case, and it is used, bringing opening close to the 2nd microphone 118.

[0022] 3rd example drawing 12 is the whole cellular-phone one apparatus video camera 201 perspective diagram, and drawing 13 is the cross section of a state of obstruction. The case 202 of the cellular-phone one apparatus video camera 201 consists of a top case 203 and a bottom case 204. The top case 203 and the bottom case 204 are connected on the hinge 205, and are pivotable to mutual. The top case 203 arranges a liquid crystal display 207, the camera head section 208, the loudspeaker 209, and the microphone 210 in the front face 206 of a case. Moreover, the antenna 214 is arranged in the rising wood 213 of the top case 203. A manual operation button 211 and the dc-battery covering 212 are arranged at the bottom case 204. A manual operation button 211 consists of a ten key 215, a top feature button 216, and a bottom feature button 217. The top feature button 216 has functions, such as memory, silence, and an identifier, and the bottom feature button 217 has functions, such as dispatch, a call, and termination. As the internal configuration of the cellular-phone one apparatus video camera 201 is shown in drawing 13, inside [218] the top case, the camera head section 208, the liquid crystal display 207, the liquid crystal display substrate 219, and the video camera substrate 220 are arranged from antenna 214 arrangement. Inside [221] the bottom case, the manual operation button 211, the telephone substrate 222, and the dc-battery 223 are arranged.

[0023] The cellular-phone one apparatus video camera 201 is placed on a desk, and when using it as a cellular phone of the handsfree mold detached and used from a face, the bottom case 204 is placed on a desk, the top case 203 is rotated and extended through a hinge 205, and it is used, setting a liquid crystal display 207 as a legible angle. In this busy condition, the bottom case 204 serves as susceptor of the top case 203 which arranges the camera head section 208. And at the time of un-using it, the top case 203 is bent on a hinge 205, and a polymerization is carried out on the bottom case 204 (condition of drawing

13). The camera head section 208 and the liquid crystal display 207 of the top case 203 are covered in the front face 224 of a bottom case in which the manual operation button 211 is arranged. Therefore, when carrying and carrying the cellular-phone one apparatus video camera 201, a finger can touch the graphic display side 225 of the lens of the video camera section 208, or a liquid crystal display 207, or it can protect from dust adhering.

[0024]

[Effect of the Invention] The cellular-phone one apparatus video camera of this invention has the following effects.

- (1) Since the video camera section of a case and the graphic display section are prepared possible [closing motion of a wrap electric shielding means], the fingerprint to the lens [of the video camera section] and display top of the graphic display section and adhesion of dust can be prevented.
- (2) Covering of the transparence of a case can check the contents of a display, such as the telephone number, with covering closed while preventing that the fats and oils of a cheek adhere to the graphic display section, when using as a hand-set mold telephone set.
- (3) Since the camera case (the 1st case) which arranges the video camera section and a year loudspeaker to the main part of a case (the 2nd case) was supported to revolve pivotable, when using a cellular-phone one apparatus video camera as a hand-set mold telephone set, at the time of the non-busy condition of an image input means, a surroundings lump lens is covered for a video camera with a case in a case, and prevent the dirt of the lens by contact of a user's hair etc.
- [0025] (4) Since the electrodynamic acoustic transducer which is reversible equipment arranged in a case lower limit can act as a sound collector (microphone) when using it as a hand-set mold telephone set, and it can be made to act as a vocal apparatus (loudspeaker) in the case of the handsfree telephone set which detaches and uses a case from a face on the other hand, the one arrangement number of a microphone can be excluded.
- (5) Since the case rising wood of a cellular-phone one apparatus video camera was made into the inclination configuration of 1 time thru/or 10 degrees, when it uses as a hand-set mold telephone set, a year loudspeaker contacts an earlobe extensively and reduces the leakage of voice.
- (6) The loudspeaker and microphone of a cellular-phone function part have been arranged to each of the field in which the graphic display section of a case was carried, and the field of the opposite side, when using it as a hand-set mold telephone set, the dirt of the video camera section by the hair of hair or the fats and oils of a cheek or the graphic display section was prevented, and deterioration of the control unit by the breath breathe out is prevented.
- [0026] (7) By folding up at the time of un-using it, the cellular-phone one apparatus video camera which constitutes a top case and a bottom case rotatable can cover the arrangement side of the video camera section of a top case, and the above-mentioned graphic display section with a bottom case, and protects the video camera section and the graphic display section from adhesion of dust.
- (8) When a top case and a bottom case are extended, a bottom case serves as susceptor of a top case which carries the camera head section, and makes camera actuation easy.

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TECHNICAL FIELD

[Industrial Application] This invention relates to the video camera which carries out the wireless transmission and reception of the image photoed especially in the video camera section using a cellular-phone function about the cellular-phone one apparatus video camera which carried in the case the video camera section which consists of a lens and an image sensor, the graphic display section, and the cellular-phone function part which carries out the wireless transmission and reception of the message signal of a telephone.

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PRIOR ART

[Description of the Prior Art] As this kind of a cellular-phone one apparatus video camera, there is "an electronic "still" camera with a cellular-phone function" currently indicated by JP,6-133081,A conventionally. By constituting the image which carried the cellular-phone function and was photoed to the digital electronic "still" camera possible [electrical transmission to the large-sized storage which is immediately in somewhere else using the telephone line], the configuration of the camera currently indicated has improved the sex instancy and has followed up the little (storage capacity is small) of the storage number of sheets of memory card. This camera has arranged the loudspeaker, the display, the dial control unit, and the microphone in the front face of a case, and arranged the lens and the antenna on the head side of a case.

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EFFECT OF THE INVENTION

[Effect of the Invention] The cellular-phone one apparatus video camera of this invention has the following effects.

- (1) Since the video camera section of a case and the graphic display section are prepared possible [closing motion of a wrap electric shielding means], the fingerprint to the lens [of the video camera section] and display top of the graphic display section and adhesion of dust can be prevented.
- (2) Covering of the transparence of a case can check the contents of a display, such as the telephone number, with covering closed while preventing that the fats and oils of a cheek adhere to the graphic display section, when using as a hand-set mold telephone set.
- (3) Since the camera case (the 1st case) which arranges the video camera section and a year loudspeaker to the main part of a case (the 2nd case) was supported to revolve pivotable, when using a cellular-phone one apparatus video camera as a hand-set mold telephone set, at the time of the non-busy condition of an image input means, a surroundings lump lens is covered for a video camera with a case in a case, and prevent the dirt of the lens by contact of a user's hair etc.
- [0025] (4) Since the electrodynamic acoustic transducer which is reversible equipment arranged in a case lower limit can act as a sound collector (microphone) when using it as a hand-set mold telephone set, and it can be made to act as a vocal apparatus (loudspeaker) in the case of the handsfree telephone set which detaches and uses a case from a face on the other hand, the one arrangement number of a microphone can be excluded.
- (5) Since the case rising wood of a cellular-phone one apparatus video camera was made into the inclination configuration of 1 time thru/or 10 degrees, when it uses as a hand-set mold telephone set, a year loudspeaker contacts an earlobe extensively and reduces the leakage of voice.
- (6) The loudspeaker and microphone of a cellular-phone function part have been arranged to each of the field in which the graphic display section of a case was carried, and the field of the opposite side, when using it as a hand-set mold telephone set, the dirt of the video camera section by the hair of hair or the fats and oils of a cheek or the graphic display section was prevented, and deterioration of the control unit by the breath breathe out is prevented.
- [0026] (7) By folding up at the time of un-using it, the cellular-phone one apparatus video camera which constitutes a top case and a bottom case rotatable can cover the arrangement side of the video camera section of a top case, and the above-mentioned graphic display section with a bottom case, and protects the video camera section and the graphic display section from adhesion of dust.
- (8) When a top case and a bottom case are extended, a bottom case serves as susceptor of a top case which carries the camera head section, and makes camera actuation easy.

[Translation done.]

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] The lens which are some video cameras is fixing and arranging the above-mentioned conventional example in the case side, and the display which should serve as a finder is also the same, it is fixed to the front face of a case, and both are stationed mostly at the rectangular condition. For this reason, when using it as a handsfree telephone set which talks over the telephone while looking at a display, a sender's face could not be copied and consideration in the case of using it as a TV phone was not carried out. Moreover, since a loudspeaker and a display were on the same field of a case when using it as a usual hand-set telephone, when the ear was forced on the loudspeaker, the cheek contacted the display, the display side became dirty with the fats and oils of a cheek, and un-arranging [which causes image quality deterioration] arose.

[0004] Then, this invention offers the cellular-phone one apparatus video camera which can transmit and receive the clear image which image quality deterioration does not produce, when using it as a handsfree telephone set, and a sender's face can be copied and it uses it as a hand-set telephone set.

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MEANS

[Means for Solving the Problem] In order to solve a technical problem of the above-mentioned conventional example, the video camera section which consists of a lens and an image sensor, the graphic display section, and a cellular-phone function part which carries out the wireless transmission and reception of the message signal of a telephone (a loudspeaker and microphone) are carried in a case, and a configuration which enables axial support of the closing motion of a wrap electric shielding means (it constitutes from a transparent material) of the graphic display section at a case is provided at least. Moreover, it has the 1st case and the graphic display section which arrange and carry a loudspeaker of the video camera section and a cellular-phone function part in an abbreviation rectangular cross condition, and the 2nd case carrying a microphone, and the 1st case possesses a configuration supported to revolve pivotable centering on a horizontal axis of the 2nd case. Furthermore, you build two loudspeakers in a case and the 1st loudspeaker makes it rotate in one with the video camera section. A configuration which constitutes the 2nd loudspeaker from an electrodynamic acoustic transducer, and is arranged to a lower limit of a case, Moreover, a configuration which is the inclined plane whose loudspeaker loading sides of the 1st case are 1 time thru/or 10 degrees, The 1st loudspeaker or 1st microphone of a cellular-phone function part is arranged to a field in which the graphic display section of a case was carried, and a configuration which arranges the 2nd loudspeaker and 2nd microphone of a cellular-phone function part to a field in which the graphic display section was carried, and a field of the opposite side is provided.

[0006] Furthermore, it constitutes from a top case which has the video camera section and the graphic display section for a case, and a bottom case which has a control unit and a dc-battery, and a top case and a bottom case possess a configuration connected rotatable by hinge region.

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OPERATION

[Function] The electric shielding means supported by the case possible [closing motion] prevents adhesion of a cover, a fingerprint, and dust for the graphic display section at least, and the electric shielding means of transparence makes closing motion of covering unnecessary at the check of the contents of a display of images, such as the telephone number. since the ear receiver (loudspeaker) of the video camera section and a cellular phone function part be arrange by the 1st case in the abbreviation rectangular cross condition and axial support be carry out pivotable the center [the horizontal axis of the 2nd case] at it , when using a cellular phone one apparatus video camera as a hand set mold telephone set (operation which made the main part approach a head) , it prevent rotating the video camera section inside a case , covering a lens with a case , and a lens becoming dirty from the fats and oils of the hair . The electrodynamic acoustic transducer formed in the case lower limit acts as a sound collector (microphone), when using it as a hand-set mold telephone set, and on the other hand, in the case of the handsfree telephone set which separates a case from a head and uses it, this electrodynamic acoustic transducer acts as a vocal apparatus (loudspeaker).

[0008] Moreover, the loudspeaker section contacts an earlobe extensively along the inclination of a user's head, and the inclined plane of 1 time thru/or 10 degrees of the front rising wood of a case prevents the leakage of the sound from a loudspeaker, when it uses as a hand-set mold telephone set. When using it as a hand-set mold telephone set, the loudspeaker and microphone of a cellular-phone function part which have been arranged to the field in which the graphic display section of a case was carried, and the field of the opposite side prevent the dirt of the video camera section by the hair of hair, or the fats and oils of a cheek, or the graphic display section, and prevent deterioration of the control unit by the breath breathe out.

[0009] By folding up, the top case and bottom case which were combined mutually pivotable are that of a wrap in a bottom case about the video camera section and the graphic display section of a top case, and while protecting the video camera section and the graphic display section from adhesion of dust, a bottom case serves as susceptor of the video camera section.

[0010]

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EXAMPLE

[Example] The example of this invention is explained in full detail with reference to a drawing. 1st example drawing 1 shows the whole perspective diagram showing the front face of a case of the cellular-phone one apparatus video camera of this example, and, as for drawing 5, drawing 2 shows the whole condition from the A-A' cross section of drawing 1, and drawing 3, as for drawing 6 to the drawing of a busy condition, and drawing 8. The cellular-phone one apparatus video camera 1 consists of the camera head section 20 carried in a case and a case, the liquid crystal display section 8, a telephone function part, etc. A case has the main part 2 of a case which is the 2nd case, and the camera case 5 which is the 1st case. The main part 2 of a case consists of the rising wood 4 in which an antenna 6 is attached, the case thorax 7 in which the liquid crystal display section 8 is carried, the case lumbar part 9 which arranges a manual operation button 10, and the case lower part 11 in which the electric type-conversion machine 12 is carried, and carries out sequential arrangement from rising wood 4 to the case lower part 11. The front face 33 of case rising wood 4 is made to incline with the inclination of an angle theta. In this example, it may be $\theta = 5$ times. The manual operation button 10 of the case lumbar part 9 serves as the ten keys 26 from 0 to 9 for inputting the telephone number from the feature buttons 27 and 28, such as dispatch and termination. Inside [13] the main part 2 of a case, the telephone set substrate 14, the liquid crystal display substrate 15, and the video camera substrate 16 grade are arranged. Furthermore, a dc-battery 18 is built in the case lower limit posterior part 17, and it is covered with the dc-battery covering 19. Rising wood 4 forms a cavity in a part for a center section, and arranges the camera case 5. The camera case 5 fits into a part for the cavity of the rising wood 7 of the main part 2 of a case, and is arranged free [rotation].

[0011] The camera hole 24 is punched at the whole surface, and the camera case 5 carries the year loudspeaker 21 and a microphone 22 in the camera case 5 while arranging in the interior corresponding to the camera hole 24 the camera head section 20 which consists of a lens, an image sensor, etc. When the camera head section 20 has been arranged in camera hole 24 location used as the same field as a liquid crystal display 8, the year loudspeaker 21 is arranged in the location used as the field of the case rising wood 4 which arranges an antenna 6, and the same upper surface. That is, the arrangement side of the camera head section 20 and the arrangement side 32 of the year loudspeaker 21 intersect perpendicularly. In this example, a microphone 22 is arranged to the same field as the camera head section 20.

[0012] The arrangement side 32 of the year loudspeaker 21 is made to incline with the inclination of an angle theta. Case rising wood 4 front face is cut so that it may become flat-tapped with the year loudspeaker arrangement side 32, and few [the sound hole 34 neighborhood] depressions 35 are attached. That is, when the camera case 5 is rotated and the arrangement side 32 of the year loudspeaker 21 turns into the front face 3 of the main part 2 of a case, the front face of the rising wood 4 of the main part 2 of a case and the arrangement side 32 of the year loudspeaker 21 of the camera case 5 turn into the same inclined plane. theta is doubled with one angle of the earlobe and cheek which have been projected from the head thru/or 10 degrees in a body head whenever [this tilt-angle]. Since the arrangement side 32 of the year loudspeaker 21 agrees in the protrusion side of an earlobe and a cheek, the display

covering 25 neighborhood contacts a cheek and the year loudspeaker 21 and an earlobe stick whenever [this tilt-angle] when using the cellular-phone one apparatus video camera 1 as a portable telephone, the leakage of the voice from the year loudspeaker 21 is reduced.

[0013] Moreover, as the whole main part 2 configuration of a case is shown in drawing 7 , the case rising wood 4 in which the camera case 5 is arranged forms a loose radius of circle, and narrows. The case thorax 7 by which the display 8 has been arranged uses a part for a center section as the fuselage which gave the loose swelling, and the case lumbar part 9 by which the manual operation button 10 has been arranged forms a loose radius of circle, and narrows, and it makes the configuration of breadth the case lower part 11 by which the electrodynamic type converter 12 has been arranged at last. When using it as a portable telephone, it is easy to have this whole configuration, and it is not slipped down from in its hands. The knurling tool 23 for skids in the surface of the camera case 5 is carved. The electrodynamic type converter 12 is reversible equipment which a voice coil vibrates within the magnetic gap of a permanent magnet, a voice coil and the diaphragm of one will shake air and will become a loudspeaker if it consists of a diaphragm, a voice coil, and a permanent magnet and speech current is passed to a voice coil, speech current will utter to a voice coil if a diaphragm vibrates and a voice coil crosses a magnetic field within a magnetic gap with voice on the contrary, and serves as a microphone. The camera case 5 is supported to revolve in 270 degrees pivotable in the arrow head 29 direction with the liquid crystal display 8 in the rising wood 4 of the main part 2 of a case by setting the axis of rotation as a shaft parallel to horizontally it becomes settled uniquely.

[0014] In order to rotate the camera case 5 to the main part 2 of a case, the main part 2 of a case is supported with the left hand, and a liquid crystal display 8 is held at a legible angle, and by the right thumb and a right forefinger, it pinches camera case 5, and rotates, and whenever [angle-of-coverage / of the camera head section 20] is set up. At this time, the knurling tool 23 of the camera case 5 acts a skid to rotation actuation. In the front face of the liquid crystal display 8 of the main part 2 of a case, the display covering 25 which can be opened and closed is supported to revolve pivotable by the main part 2 of a case. The display covering 25 is the transparent body, and after the display of a liquid crystal display 8 has carried out covering 25, it can be seen.

[0015] Thus, actuation of the cellular-phone one apparatus video camera 1 to constitute is explained.

(1) Use the cellular-phone one apparatus video camera 1 as a handsfree telephone set (refer to drawing 1). The camera case 5 is rotated and the camera head section 20 is turned to the front face 3 of a case. The display covering 25 can be opened so that the liquid crystal display 8 arranged in the front face 3 of a case can be faced squarely. A photograph is taken acting as the monitor of the photographic subject which exists in the operator [of the cellular-phone one apparatus video camera 1], or front-face 3 side of a case in the camera head section 20 with a liquid crystal display 8. The voice of a user's (photography person) etc. photographic subject collects a sound from the microphone phone 22 which adjoins the camera head section 20. On the other hand, the voice of the partner received by the cellular-phone function is reproduced from the electrodynamic type converter 12 arranged at the case lower part 11. In this case, the year loudspeaker 21 prepared in the camera case 5 shall not operate. The image of the side here which is going to transmit to a liquid crystal display 8 the image of the received partner and after this is displayed, and it can talk over the telephone, looking at an image.

[0016] (2) Use as-video cameras in the case of photoing the photographic subject which exists behind the cellular-phone one apparatus video camera 1 etc. (refer to drawing 3 and drawing 4). When photoing the photographic subject which exists behind the cellular-phone one apparatus video camera 1, the camera case 5 is rotated in the arrow head 29 direction, and the camera head section 20 is turned to the case back 30. In this case, a liquid crystal display 8 acts as an electronic view finder. A user photos the photographic subject which exists behind a video camera 1, acting as a monitor with a liquid crystal display 8.

[0017] (3) Use the cellular-phone one apparatus video camera 1 as a hand-set mold portable telephone (refer to drawing 5 , drawing 6 , and drawing 7). The camera case 5 is rotated and let the year loudspeaker arrangement side 32 of the camera case 5 be the front face 3 of a case. At this time, the camera head section 20 serves as the inside of the main part 2 of a case, and the photography hole 24

hides in the interior 13 of a case. Therefore, fats and oils adhere and the photography hole 24 is protected from the main part 2 of a case serving as covering, a lens being protected, the hair contacting the lens of the camera head section 20, and dust adhering. Moreover, the power supply of the camera head section 20 is considered as the configuration cut automatically at this time. A liquid crystal display 8 closes and protects the display covering 25. The front face 33 of a case upper limb inclines with the inclination of an angle θ . In this example, it is $\theta = 5$ times. This is what doubled the 21st page of a loudspeaker with one angle of the earlobe and cheek which have been projected from the head thru/or 10 degrees, and the display covering 25 neighborhood contacts a cheek, the year loudspeaker 21 and an earlobe stick it, and he is trying to reduce the leakage of the voice from the year loudspeaker 21. The year loudspeaker arrangement side 32 is a plane omitted so that it might become flat-tapped with the front face 33 of a case upper limb, and few [the sound hole 34 neighborhood] depressions 35 are attached.

[0018] In the rising wood 4 of the camera case 5 with which the year loudspeaker 21 has been arranged, the main part 2 of a case of this example narrows. Since the case lower part 11 by which the case thorax 7 by which the display 8 has been arranged swelled, the case lumbar part 9 by which the manual operation button 10 has been arranged narrowed, and the electrodynamic type converter 12 has been arranged is made into the configuration of breadth at last If it has the case lumbar part 9 by hand, although a thorax 7 will lay on a hand and a hand will loosen, there is little risk of dropping the cellular-phone one apparatus video camera 1, and the safety of a pocket device improves. Moreover, the case lower part 11 of breadth has falling [little], since stability is well stable when the cellular-phone one apparatus video camera 1 is placed on a desk at last.

[0019] The whole cellular-phone one apparatus video camera 101 perspective diagram [in / in 2nd example drawing 8 / this example] and drawing 9 are [rear view and drawing 11 of explanatory drawing of operation and drawing 10] drawing 10 line D-D' cross sections. In the front face 103 of the case 102 of the cellular-phone one apparatus video camera 101, a liquid crystal display 104, the camera head section 105, the 1st loudspeaker 106, the 1st microphone 107, the manual operation button 108, and the front cover 109 are arranged. The antenna 111 is arranged in the rising wood 110 of a case 102. The front cover 109 has covered a liquid crystal display 104, the camera head section 105, the 1st loudspeaker 106, and the 1st microphone 107. Axial support is carried out pivotable to the rising wood of a case 102 through the hinge 112, and a front cover 109 is taken as the configuration which can be held where a front cover 109 is extended. The front cover 109 consists of transparent materials, and also where a front cover 109 is shut, it can read the contents of an input of a feature button 108. A manual operation button 108 consists of a ten key 113, a top feature button 114, and a bottom feature button 115. The top feature button 114 has functions, such as memory, silence, and an identifier, and the bottom feature button 115 has functions, such as dispatch, a call, and termination.

[0020] The manual operation button 108, the cellular-phone substrate 121, the microphone 118, and the dc-battery (not shown) are arranged at the liquid crystal display 104 constituted from the liquid crystal panel 124 and back light 125 of a transparency mold by the camera head section 105 and the year loudspeaker 117, and pars intermedia from a upside antenna 111 arrangement portion inside [120] the case of the cellular-phone one apparatus video camera 101, the liquid crystal display substrate 122 and the video camera substrate 123, and the lower part. It is fixed to the case 102 and does not carry out movable [of the video camera section 105].

[0021] Drawing 9 shows the condition of having extended the front cover 109. When using it as a cellular phone of the handsfree mold which detaches and uses the cellular-phone one apparatus video camera 101 from a face, the voice input to the 1st microphone 106 and the voice output from the 1st loudspeaker 106 are possible by open Lycium chinense in a front cover 109. Moreover, a liquid crystal display 104 can be squarely faced without deterioration of image quality, without penetrating a front cover 109. Thus, as shown in the back of the cellular-phone one apparatus video camera 101 to constitute at drawing 10, the 2nd year loudspeaker 117, microphone 118, and dc-battery covering 119 are arranged at the case back 116. [2nd] When using this cellular-phone one apparatus video camera 101 as a cellular phone of a hand-set mold, an ear is applied for the 2nd year loudspeaker 117 on the

back 116 of a case, and it is used, bringing opening close to the 2nd microphone 118.

[0022] 3rd example drawing 12 is the whole cellular-phone one apparatus video camera 201 perspective diagram, and drawing 13 is the cross section of a state of obstruction. The case 202 of the cellular-phone one apparatus video camera 201 consists of a top case 203 and a bottom case 204. The top case 203 and the bottom case 204 are connected on the hinge 205, and are pivotable to mutual. The top case 203 arranges a liquid crystal display 207, the camera head section 208, the loudspeaker 209, and the microphone 210 in the front face 206 of a case. Moreover, the antenna 214 is arranged in the rising wood 213 of the top case 203. A manual operation button 211 and the dc-battery covering 212 are arranged at the bottom case 204. A manual operation button 211 consists of a ten key 215, a top feature button 216, and a bottom feature button 217. The top feature button 216 has functions, such as memory, silence, and an identifier, and the bottom feature button 217 has functions, such as dispatch, a call, and termination. As the internal configuration of the cellular-phone one apparatus video camera 201 is shown in drawing 13, inside [218] the top case, the camera head section 208, the liquid crystal display 207, the liquid crystal display substrate 219, and the video camera substrate 220 are arranged from antenna 214 arrangement. Inside [221] the bottom case, the manual operation button 211, the telephone substrate 222, and the dc-battery 223 are arranged.

[0023] The cellular-phone one apparatus video camera 201 is placed on a desk, and when using it as a cellular phone of the handsfree mold detached and used from a face, the bottom case 204 is placed on a desk, the top case 203 is rotated and extended through a hinge 205, and it is used, setting a liquid crystal display 207 as a legible angle. In this busy condition, the bottom case 204 serves as susceptor of the top case 203 which arranges the camera head section 208. And at the time of un-using it, the top case 203 is bent on a hinge 205, and a polymerization is carried out on the bottom case 204 (condition of drawing 13). The camera head section 208 and the liquid crystal display 207 of the top case 203 are covered in the front face 224 of a bottom case in which the manual operation button 211 is arranged. Therefore, when carrying and carrying the cellular-phone one apparatus video camera 201, a finger can touch the graphic display side 225 of the lens of the video camera section 208, or a liquid crystal display 207, or it can protect from dust adhering.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The 1st whole example perspective diagram of this invention.

[Drawing 2] The A-A' cross section of drawing 1 .

[Drawing 3] Explanatory drawing of drawing 1 of operation.

[Drawing 4] The B-B' cross section of drawing 3 .

[Drawing 5] Explanatory drawing of drawing 1 of operation.

[Drawing 6] The C-C' cross section of drawing 5 .

[Drawing 7] Front view of drawing 5 .

[Drawing 8] The 2nd whole example perspective diagram of this invention.

[Drawing 9] Explanatory drawing of drawing 8 of operation.

[Drawing 10] The perspective diagram from the rear face of drawing 8 .

[Drawing 11] The D-D' cross section of drawing 10 .

[Drawing 12] The 3rd whole example perspective diagram of this invention.

[Drawing 13] The central cross section of drawing 12 .

[Description of Notations]

1,101,201 Cellular-phone one apparatus video camera

2,102,202 Main part of a case

4,110,213 Rising wood

5 Camera Case

8,104,207 Liquid crystal display

10,108,211 Manual operation button

12 Electrodynamic Acoustic Transducer

20,105,208 Camera head section

21,117 Year loudspeaker

22,107,118,210 Microphone

25 Display Covering

109 Front Cover

106,209 Loudspeaker

[Translation done.]

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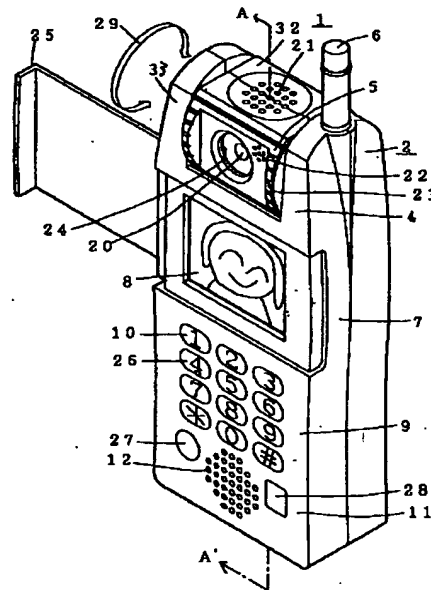
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(54) 【発明の名称】 携帯電話一体型ビデオカメラ

(57) 【要約】 (修正有)

【目的】 指紋や塵埃の付着を防止すると同時に、ハンズフリー型のテレビ電話機とハンドセット型電話機の両方で用いることができる。

【構成】 筐体本体2に回転可能に透明カバー25を軸支持し、ビデオカメラ部20または映像表示部8を覆う。また、筐体本体2の上部に映像入力手段(ビデオカメラ部)20とイヤースピーカ21とマイクロホン22を一体的に搭載したカメラ筐体5を回転(チルト)可能に軸支持する。筐体本体2の胸部7に映像表示部8、腰部9に操作ボタン10及び下部11に動電型音響変換器12を配置して携帯電話一体型ビデオカメラを構成する。映像入力手段20とイヤースピーカ21は相互に略90度回転した面に配置し、イヤースピーカ21を使用している時(ハンドセット型電話機としての使用状態)は映像入力手段20が筐体本体2の内側に回り込む構成とした。



1…携帯電話一体型ビデオカメラ、2…筐体本体、4…上蓋部、
5…カメラ筐体、8…液晶ディスプレイ、10…操作ボタン、
12…動電型音響変換器、20…カメラヘッド部、21…イヤースピーカ、
25…ディスプレイカバー、29…回転方向

【特許請求の範囲】

【請求項1】 レンズ、撮像素子よりなるビデオカメラ部と、映像表示部と、電話の通話信号を無線送受信する携帯電話機能部とを筐体内に搭載した携帯電話一体型ビデオカメラにおいて、

筐体は少なくとも映像表示部の搭載部分を覆う遮蔽手段を開閉自在に設けてなる携帯電話一体型ビデオカメラ。

【請求項2】 遮蔽手段は透明材料で構成されてなる請求項1記載の携帯電話一体型ビデオカメラ。

【請求項3】 レンズ、撮像素子よりなるビデオカメラ部と、映像表示部と、電話の通話信号を無線送受信する携帯電話機能部とを筐体内に搭載した携帯電話一体型ビデオカメラにおいて、

筐体は、ビデオカメラ部と携帯電話機能部のスピーカを搭載する第1の筐体と、映像表示部及び携帯電話機能部のマイクロホンを搭載する第2の筐体とを有し、

第1の筐体は第2の筐体の水平軸を中心に回転可能に第2の筐体に軸支されると共に、第1の筐体に搭載するビデオカメラ部と携帯電話機能部のスピーカは相互に略直交する位置に配置されてなる携帯電話一体型ビデオカメラ。

【請求項4】 携帯電話機能部は第1と第2のスピーカを有し、第1のスピーカはビデオカメラ部とともに第1の筐体内に回転可能に軸支持され、第2のスピーカは第2の筐体の下端に配置してなる請求項3記載の携帯電話一体型ビデオカメラ。

【請求項5】 第2のスピーカは動電型音響変換器である請求項4記載の携帯電話一体型ビデオカメラ。

【請求項6】 第1の筐体を支持する第2の筐体の支持部は1度乃至10度の傾斜面を有し、第1の筐体の第1のスピーカを搭載した外面近傍は第2の筐体の支持部の傾斜面と略同傾斜面である請求項3記載の携帯電話一体型ビデオカメラ。

【請求項7】 携帯電話機能部は第1と第2のスピーカと第1と第2のマイクロホンを有し、筐体の映像表示部の表示面側に携帯電話機能部の第1のスピーカおよび第1のマイクロホンを配置し、筐体の映像表示部の表示面と反対側に携帯電話機能部の第2のスピーカおよび第2のマイクロホンを配置してなる請求項1記載の携帯電話一体型ビデオカメラ。

【請求項8】 レンズ、撮像素子よりなるビデオカメラ部と、映像表示部と、電話の通話信号を無線送受信する携帯電話機能部と、操作部、バッテリーを筐体内に搭載した携帯電話一体型ビデオカメラにおいて、

筐体はビデオカメラ部、映像表示部および携帯電話機能部のスピーカとマイクロホンを搭載する上側筐体と、操作部およびバッテリーを搭載する下側筐体とからなり、上側筐体と下側筐体は相互に回動可能に連結されると共に、上側筐体を回動して閉塞したとき、ビデオカメラ部および映像表示部は下側筐体上に重畳する携帯電話一体

型ビデオカメラ。

【請求項9】 下側筐体は上側筐体に搭載するビデオカメラ部の支持台となる請求項8記載の携帯電話一体型ビデオカメラ。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、筐体内に、レンズと撮像素子よりなるビデオカメラ部と、映像表示部と、電話の通話信号を無線送受信する携帯電話機能部とを搭載した携帯電話一体型ビデオカメラに関し、特にビデオカメラ部で撮影した映像を携帯電話機能を用いて無線送受信するビデオカメラに関するものである。

【0002】

【従来の技術】従来この種の携帯電話一体型ビデオカメラとしては、特開平6-133081号公報に開示されている「携帯電話機能付電子スチルカメラ」がある。開示されているカメラの構成は、デジタル電子スチルカメラに携帯電話機能を搭載し、撮影した画像を電話回線を用いて即座に別の場所にある大型の記憶媒体に電送可能に構成することにより、即時性を改善してメモリーカードの記憶枚数の少なさ（記憶容量の小さいこと）をフォローしている。このカメラは筐体の前面にスピーカ、ディスプレイ、ダイヤル操作部、及びマイクロホンを配置し、筐体の頭部側面にレンズ及びアンテナを配置していた。

【0003】

【発明が解決しようとする課題】上記従来例は、ビデオカメラの一部であるレンズが筐体側面に固定して配設しており、ファインダーとなるべきディスプレイも同じく筐体前面に固定され、両者はほぼ直交状態に配置されている。このため、ディスプレイを見ながら通話するハンズフリー電話機として使用する場合、送話者の顔を写すことができず、テレビ電話として使用する場合の考慮がされていなかった。また、通常のハンドセット電話として使用する場合、スピーカとディスプレイが筐体の同一面上にあるために、スピーカに耳を押すつくと頬がディスプレイに接触し、ディスプレイ面が頬の油脂で汚れてしまい、画質劣化を引き起こす不都合が生じた。

【0004】そこで、本発明はハンズフリー電話機として使用するとき、送話者の顔を写すことができ、かつハンドセット電話機として使用する場合に画質劣化の生じない鮮明な画像が送受信できる携帯電話一体型ビデオカメラを提供するものである。

【0005】

【課題を解決するための手段】上記従来例の課題を解決するために、レンズ、撮像素子よりなるビデオカメラ部と、映像表示部と、電話の通話信号を無線送受信（スピーカ、マイクロホンにより）する携帯電話機能部とを筐体内に搭載し、少なくとも映像表示部を覆う遮蔽手段（透明材料で構成）を開閉可能に筐体に軸支持する構成

を具備する。また、ビデオカメラ部と携帯電話機能部のスピーカを略直交状態に配置して搭載する第1の筐体と映像表示部とマイクロホンを搭載する第2の筐体とを有し、第1の筐体は第2の筐体の水平軸を中心に回転可能に軸支する構成を具備する。さらに、筐体にスピーカを2個内蔵して、第1のスピーカはビデオカメラ部と一体的に回転させ、第2のスピーカは動電型音響変換器で構成して筐体の下端に配置する構成、また、第1の筐体のスピーカ搭載面が1度乃至10度の傾斜面である構成、筐体の映像表示部が搭載された面に携帯電話機能部の第1のスピーカあるいは第1のマイクロホンを配置し、映像表示部が搭載された面と反対側の面に携帯電話機能部の第2のスピーカ及び第2のマイクロホンを配置する構成を具備する。

【0006】さらに、筐体をビデオカメラ部及び映像表示部を有する上側筐体と、操作部及びバッテリーを有する下側筐体とから構成し、上側筐体と下側筐体とは蝶番部で回動可能に連結した構成を具備する。

【0007】

【作用】筐体に開閉可能に支持された遮蔽手段は少なくとも映像表示部を覆い、指紋や塵埃の付着を防止し、透明の遮蔽手段は電話番号等の映像の表示内容の確認にカバーの開閉を不要とする。第1の筐体にはビデオカメラ部と携帯電話機能部の受話器（スピーカ）が略直交状態に配置されて第2の筐体の水平軸を中心に回転可能に軸支持されているので、携帯電話一体型ビデオカメラをハンドセット型電話機（本体を頭部に近接させた使用方法）として使用する時は、ビデオカメラ部を筐体の内側に回転させ、レンズを筐体でカバーして、頭髮の油脂からレンズが汚れることを防ぐ。筐体下端に設けた動電型音響変換器は、ハンドセット型電話機として使用する時は集音器（マイクロホン）として作用し、一方、筐体を頭部から離して用いるハンズフリー電話機の場合はこの動電型音響変換器は発声器（スピーカ）として作用する。

【0008】また、筐体の前面上縁部の1度乃至10度の傾斜面は、ハンドセット型電話機として用いたときにスピーカ部が使用者の頭部の傾斜に沿って耳たぶに全面的に接触し、スピーカからの音の漏れを防止する。筐体の映像表示部が搭載された面と反対側の面に配置した携帯電話機能部のスピーカ及びマイクロホンは、ハンドセット型電話機として使用するとき髪の毛や頬の油脂によるビデオカメラ部や映像表示部の汚れを防ぎ、吐く息による操作部の劣化を防ぐ。

【0009】相互に回転可能に結合した上側筐体と下側筐体とは折たたむことにより、上側筐体のビデオカメラ部及び映像表示部を下側筐体で覆うので、ビデオカメラ部及び映像表示部を塵埃の付着から保護すると共に、下側筐体はビデオカメラ部の支持台となる。

【0010】

【実施例】本発明の実施例を図面を参照して詳述する。

第1実施例

図1はこの実施例の携帯電話一体型ビデオカメラの筐体前面を表した全体斜視図を示し、図2は図1のA-A'断面図、図3から図5は使用状態の図面、図6から図8は全体の状態を示す。携帯電話一体型ビデオカメラ1は、筐体と筐体内に搭載するカメラヘッド部20、液晶ディスプレイ部8、電話機能部等よりなる。筐体は第2の筐体である筐体本体2と、第1の筐体であるカメラ筐体5を有する。筐体本体2は、アンテナ6を取り付ける上縁部4、液晶ディスプレイ部8を搭載する筐体胸部7、操作ボタン10を配設する筐体腰部9と電動型変換器12を搭載する筐体下部11よりなり、上縁部4から筐体下部11へと順次配設する。筐体上縁部4の前面33は角度 θ の傾きを持って傾斜させている。本実施例では $\theta=5$ 度としている。筐体腰部9の操作ボタン10は電話番号を入力するための0から9までのテンキー26と、発信や終了等の機能ボタン27、28からなる。筐体本体2の内部13には電話機基板14、液晶表示基板15及びビデオカメラ基板16等が配置されている。さらに、筐体下端後部17にはバッテリー18が内蔵されバッテリーカバー19で覆われている。上縁部4は中央部分に凹欠部を形成し、カメラ筐体5を配設する。カメラ筐体5は筐体本体2の上縁部7の凹欠部分に嵌合し、回転自在に配設される。

【0011】カメラ筐体5はその一面にカメラ孔24が穿孔され、カメラ孔24に対応する内部にはレンズと撮像素子等からなるカメラヘッド部20を配設すると共に、カメラ筐体5内にはイヤースピーカ21およびマイクロホン22を搭載する。カメラヘッド部20が液晶ディスプレイ8と同じ面となるカメラ孔24位置に配置されたとき、イヤースピーカ21はアンテナ6を配設する筐体上縁部4の面と同じ上面となる位置に配置する。すなわち、カメラヘッド部20の配設面とイヤースピーカ21の配設面32は直交する。この実施例ではマイクロホン22はカメラヘッド部20と同じ面に配置する。

【0012】イヤースピーカ21の配設面32は角度 θ の傾きを持って傾斜させている。筐体上縁部4前面はイヤースピーカ配置面32と面一になるようにカットされており、音孔34近辺はわずかな凹み35が付けられている。すなわち、カメラ筐体5を回動してイヤースピーカ21の配設面32が筐体本体2の前面3となると、筐体本体2の上縁部4の前面とカメラ筐体5のイヤースピーカ21の配設面32は同一の傾斜面となる。この傾斜角度 θ は人体頭部において、頭より突出している耳たぶと頬との角度1度乃至10度に合わせたものである。この傾斜角度は携帯電話一体型ビデオカメラ1を携帯電話機として使用する場合、イヤースピーカ21の配設面32が耳たぶと頬の突出面に合致し、頬にディスプレイカバー25近辺が接触し、イヤースピーカ21と耳たぶ

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とが密着するので、イヤースピーカ21からの音声の漏れが低減される。

【0013】また、筐体本体2の全体形状は、図7に示すように、カメラ筐体5が配設される筐体上縁部4はゆるやかな丸みを形成してすばまり、ディスプレイ8が配置された筐体胸部7は中央部分をゆるやかな膨らみを持たせた胴体とし、操作ボタン10が配置された筐体腰部9はゆるやかな丸みを形成してすばまり、動電型変換器12が配置された筐体下部11は末広りの形状としている。この全体形状は携帯電話機として使用する場合、持ちやすく、かつ、手中から滑落することがない。カメラ筐体5の表面は滑り止め用のローレット23が彫り込まれている。動電型変換器12は振動板とボイスコイルと永久磁石から構成され、ボイスコイルに音声電流を流すとボイスコイルが永久磁石の磁気ギャップ内で振動しボイスコイルと一体の振動板が空気を震わせてスピーカになり、反対に音声によって振動板が振動して磁気ギャップ内でボイスコイルが磁界を横切るとボイスコイルに音声電流が発声してマイクロホンとなる可逆装置である。カメラ筐体5は液晶ディスプレイ8によって一義的に定まる水平方向と平行の軸を回転軸として、矢印29方向に270度の範囲で回転可能に筐体本体2の上縁部4に軸支されている。

【0014】筐体本体2に対してカメラ筐体5を回転させるには、左手で筐体本体2を支えて液晶ディスプレイ8を見易い角度に保持し、右手の親指と人差指でカメラ筐体5つまんで回転し、カメラヘッド部20の撮影角度を設定する。このとき、カメラ筐体5のローレット23は回転操作に対して滑り止めの作用をなす。筐体本体2の液晶ディスプレイ8の前面には開閉可能なディスプレイカバー25が筐体本体2に回転可能に軸支されている。ディスプレイカバー25は透明体であって、液晶ディスプレイ8の表示がカバー25をした状態で見る事ができる。

【0015】このように構成する携帯電話一体型ビデオカメラ1の操作を説明する。

(1) 携帯電話一体型ビデオカメラ1をハンズフリー電話機として用いる(図1参照)。カメラ筐体5を回転してカメラヘッド部20を筐体前面3に向ける。筐体の前面3に配設する液晶ディスプレイ8を直視できるようにディスプレイカバー25は開けられている。カメラヘッド部20で携帯電話一体型ビデオカメラ1の操作者あるいは筐体前面3側に存在する被写体を液晶ディスプレイ8でモニターしながら撮影する。使用者(撮影者)等の被写体の音声はカメラヘッド部20に隣接するマイクロホン22から集音する。一方、携帯電話機能で受信された相手の音声は筐体下部11に配置された動電型変換器12より再生される。この場合、カメラ筐体5に設けられたイヤースピーカ21は動作しないものとする。液晶ディスプレイ8には受信された相手の映像やこ

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れから送信しようとするこちら側の映像を表示し、映像を見ながら通話することができる。

【0016】(2) 携帯電話一体型ビデオカメラ1の後方に存在する被写体を撮影する場合等のビデオカメラとして用いる(図3及び図4参照)。携帯電話一体型ビデオカメラ1の後方に存在する被写体を撮影する場合、カメラ筐体5を矢印29方向に回転し、カメラヘッド部20を筐体背面30に向ける。この場合、液晶ディスプレイ8は電子ビューファインダーとして作用する。使用者は液晶ディスプレイ8でモニターしながら、ビデオカメラ1の後方に存在する被写体を撮影する。

【0017】(3) 携帯電話一体型ビデオカメラ1をハンドセット型携帯電話機として用いる(図5、図6、図7参照)。カメラ筐体5を回転させてカメラ筐体5のイヤースピーカ配置面32を筐体前面3とする。この時、カメラヘッド部20は筐体本体2の内側となり、撮影孔24は筐体内部13に隠れる。したがって、撮影孔24は筐体本体2がカバーとなってレンズが保護され、カメラヘッド部20のレンズに頭髮が接触して油脂が付着したり、また塵埃が付着することから守られる。また、この時点でカメラヘッド部20の電源は自動的に切断する構成とする。液晶ディスプレイ8はディスプレイカバー25を閉じて保護する。筐体上縁前面33は角度 θ の傾きを持って傾斜している。本実施例では $\theta=5$ 度である。これは頭より突出している耳たぶと頬との角度1度乃至10度にスピーカ21面を合わせたもので、頬にディスプレイカバー25近辺が接触し、イヤースピーカ21と耳たぶとが密着してイヤースピーカ21からの音声の漏れを低減するようにしている。イヤースピーカ配置面32は筐体上縁前面33と面一になるようにカットされた平面であり、音孔34近辺はわずかな凹み35が付けられている。

【0018】本実施例の筐体本体2は、イヤースピーカ21が配置されたカメラ筐体5の上縁部4はすばまり、ディスプレイ8が配置された筐体胸部7は膨らみ、操作ボタン10が配置された筐体腰部9はすばまり、動電型変換器12が配置された筐体下部11は末広りの形状としているので、筐体腰部9を手で持つと手の上に胸部7が載置し、手が緩んでも携帯電話一体型ビデオカメラ1を落す危険が少なく、携帯機器の安全性が向上する。また、末広りの筐体下部11は携帯電話一体型ビデオカメラ1を机の上に置いた時に座りが良く安定しているので倒れることが少ない。

【0019】第2実施例

図8はこの実施例における携帯電話一体型ビデオカメラ101の全体斜視図、図9は動作説明図、図10は背面図、図11は図10線D-D'断面図である。携帯電話一体型ビデオカメラ101の筐体102の前面103には液晶ディスプレイ104、カメラヘッド部105、第1のスピーカ106、第1のマイクロホン107、操作

ボタン108及びフロントカバー109が配置されている。筐体102の上縁部110にはアンテナ111が配設されている。フロントカバー109は液晶ディスプレイ104、カメラヘッド部105、第1のスピーカ106及び第1のマイクロホン107を覆っている。フロントカバー109は蝶番112を介して筐体102の上縁部に回転可能に軸支持されており、フロントカバー109を拡張した状態で保持できる構成とする。フロントカバー109は透明材料で構成されており、フロントカバー109を閉めた状態でも機能ボタン108の入力内容を

読み取ることができる。操作ボタン108はテンキー113、上側機能ボタン114及び下側機能ボタン115よりなる。上側機能ボタン114はメモリ、消音および名前等の機能を有し、下側機能ボタン115は発信、呼出し及び終了等の機能を有する。

【0020】携帯電話一体型ビデオカメラ101の筐体内部120には、上部のアンテナ111配設部分より、カメラヘッド部105およびイヤースピーカ117、中間部に透過型の液晶パネル124及びバックライト125から構成される液晶ディスプレイ104、液晶表示基板122及びビデオカメラ基板123、下部には操作ボタン108、携帯電話基板121、マイクロホン118及びバッテリー（図示せず）が配置されている。ビデオカメラ部105は筐体102に固定されており、可動しない。

【0021】図9はフロントカバー109を拡張した状態を示す。携帯電話一体型ビデオカメラ101を顔から離して使用するハンズフリー型の携帯電話として使用する場合、フロントカバー109を開くことにより第1のマイクロホン106への音声入力や第1のスピーカ106からの音声出力が可能である。また、液晶ディスプレイ104をフロントカバー109を透過することなく、画質の劣化なしに直視できる。このように構成する携帯電話一体型ビデオカメラ101の背面には、図10に示すように、筐体背面116に第2のイヤースピーカ117、第2のマイクロホン118及びバッテリーカバー119が配置されている。この携帯電話一体型ビデオカメラ101をハンドセット型の携帯電話として使用する

場合、筐体背面116の第2のイヤースピーカ117を耳を当て、口を第2のマイクロホン118に近付けて使用

【0022】第3実施例

図12は携帯電話一体型ビデオカメラ201の全体斜視図、図13は閉塞状態の断面図である。携帯電話一体型ビデオカメラ201の筐体202は上側筐体203と下側筐体204とからなる。上側筐体203と下側筐体204とは蝶番205で連結されており、相互に回転可能となっている。上側筐体203は筐体前面206に液晶ディスプレイ207、カメラヘッド部208、スピーカ209及びマイクロホン210を配置している。また、

上側筐体203の上縁部213にはアンテナ214を配置している。下側筐体204には操作ボタン211及びバッテリーカバー212が配置されている。操作ボタン211はテンキー215、上側機能ボタン216及び下側機能ボタン217よりなる。上側機能ボタン216はメモリ、消音および名前等の機能を有し、下側機能ボタン217は発信、呼出し及び終了等の機能を有する。携帯電話一体型ビデオカメラ201の内部構成は図13に示すように、上側筐体内部218には、アンテナ214配設方向からカメラヘッド部208、液晶ディスプレイ207、液晶表示基板219及びビデオカメラ基板220が配置されている。下側筐体内部221には操作ボタン211、電話基板222、バッテリー223が配置されている。

【0023】携帯電話一体型ビデオカメラ201を机上に置き、顔から離して使用するハンズフリー型の携帯電話としての使用する場合、下側筐体204を机上に置き、上側筐体203を蝶番205を介して回転して拡張し、液晶ディスプレイ207を見易い角度に設定して使用する。この使用状態において、下側筐体204はカメラヘッド部208を配設する上側筐体203の支持台となる。そして、不使用時には、上側筐体203を蝶番205で折り曲げ、下側筐体204上に重合する（図13の状態）。上側筐体203のカメラヘッド部208や液晶ディスプレイ207は操作ボタン211が配置されている下側筐体前面224で覆われる。したがって、携帯電話一体型ビデオカメラ201を携帯して持ち運ぶときに、ビデオカメラ部208のレンズや液晶ディスプレイ207の映像表示面225に指が触れたり、塵埃が付着することから守ることができる。

【0024】

【発明の効果】本発明の携帯電話一体型ビデオカメラは、以下の効果を有する。

(1) 筐体のビデオカメラ部、映像表示部を覆う遮蔽手段を開閉可能に設けているので、ビデオカメラ部のレンズ、映像表示部のディスプレイ上への指紋や塵埃の付着を防止できる。

(2) 筐体の透明のカバーは、ハンドセット型電話機として用いる時、頬の油脂が映像表示部に付着することを防止すると共に、カバーを閉じたままで電話番号等の表示内容を確認できる。

(3) 筐体本体（第2の筐体）に対してビデオカメラ部とイヤースピーカを配設するカメラ筐体（第1の筐体）を回転可能に軸支したので、携帯電話一体型ビデオカメラをハンドセット型電話機として使用する時、すなわち、映像入力手段の非使用状態時はビデオカメラが筐体内に回り込みレンズが筐体でカバーされて、使用者の頭髮等の接触によるレンズの汚れを防ぐ。

【0025】(4) 筐体下端に配設する可逆装置である動電型音響変換器は、ハンドセット型電話機として使用

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する時は集音器（マイクロホン）として作用し、一方、筐体を顔から離して用いるハンズフリー電話機の場合は発声器（スピーカ）として作用させることができるので、マイクロホンの配設個数を1個省くことができる。

（5）携帯電話一体型ビデオカメラの筐体上縁部は1度乃至10度の傾斜形状としたので、ハンドセット型電話機として用いた時に、イヤースピーカが耳たぶに全面的に接触し、音声の漏れを低減する。

（6）筐体の映像表示部が搭載された面と反対側の面のそれぞれに携帯電話機能部のスピーカ及びマイクロホン20を配置して、ハンドセット型電話機として使用するとき髪の毛や頬の油脂によるビデオカメラ部や映像表示部の汚れを防ぎ、吐く息による操作部の劣化を防止している。

【0026】（7）上側筐体と下側筐体とを回動可能に構成する携帯電話一体型ビデオカメラは、不使用時には折たたむことにより、上側筐体のビデオカメラ部及び上記映像表示部の配置面を下側筐体で覆うことができ、ビデオカメラ部及び映像表示部を塵埃の付着から保護する。

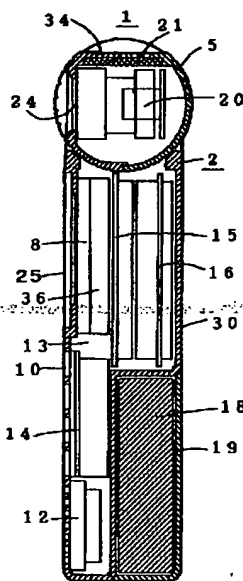
（8）上側筐体と下側筐体とを拡開したとき、下側筐体はカメラヘッド部を搭載する上側筐体の支持台となり、カメラ操作を容易とする。

【図面の簡単な説明】

【図1】本発明の第1の実施例の全体斜視図。

【図2】図1のA-A'断面図。

【図2】



1…携帯電話一体型ビデオカメラ、2…筐体本体、5…カメラ筐体、8…液晶ディスプレイ、10…操作ボタン、12…動電型変換器、14…電話基板、15…液晶表示基板、16…ビデオカメラ基板、20…カメラヘッド部、21…イヤースピーカ、25…ディスプレイカバー、29…回転方向

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【図3】図1の動作説明図。

【図4】図3のB-B'断面図。

【図5】図1の動作説明図。

【図6】図5のC-C'断面図。

【図7】図5の正面図。

【図8】本発明の第2の実施例の全体斜視図。

【図9】図8の動作説明図。

【図10】図8の裏面からの斜視図。

【図11】図10のD-D'断面図。

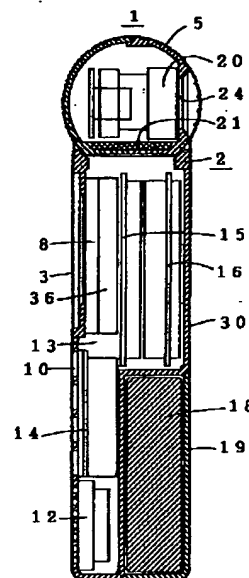
【図12】本発明の第3の実施例の全体斜視図。

【図13】図12の中心断面図。

【符号の説明】

- 1, 101, 201 携帯電話一体型ビデオカメラ
- 2, 102, 202 筐体本体
- 4, 110, 213 上縁部
- 5 カメラ筐体
- 8, 104, 207 液晶ディスプレイ
- 10, 108, 211 操作ボタン
- 12 動電型音響変換器
- 20, 105, 208 カメラヘッド部
- 21, 117 イヤースピーカ
- 22, 107, 118, 210 マイクロホン
- 25 ディスプレイカバー
- 109 フロントカバー
- 106, 209 スピーカ

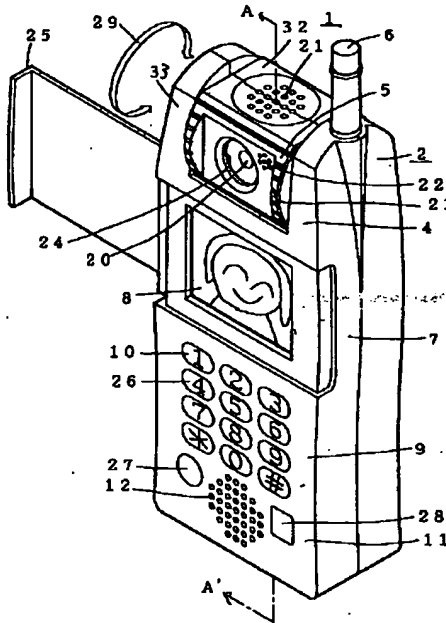
【図4】



1…携帯電話一体型ビデオカメラ、2…筐体本体、5…カメラ筐体、8…液晶ディスプレイ、10…操作ボタン、12…動電型変換器、14…電話基板、15…液晶表示基板、16…ビデオカメラ基板、20…カメラヘッド部、21…イヤースピーカ、25…ディスプレイカバー、29…回転方向

【図1】

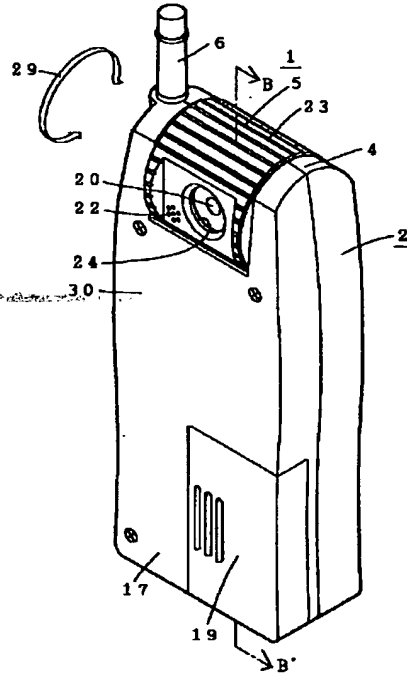
*hands-free
telephone
set (7)*



1…携帯電話一体型ビデオカメラ、2…筐体本体、4…上蓋部、
5…カメラ筐体、8…液晶ディスプレイ、10…操作ボタン、
12…充電変換器、20…カメラヘッド部、21…イヤースピーカ、
25…ディスプレイカバー、29…回転方向

【図3】

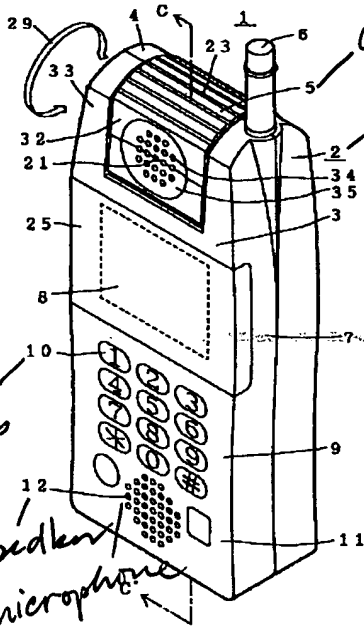
video camera



1…携帯電話一体型ビデオカメラ、2…筐体本体、4…上蓋部、
5…カメラ筐体、19…バッテリーカバー、20…カメラヘッド部、
22…マイク、29…回転方向

【図5】

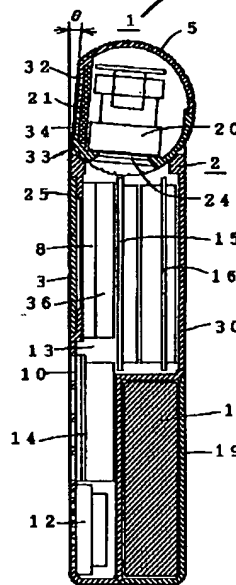
*handset-type
phone set-type
camera case
body
main case body*



1…携帯電話一体型ビデオカメラ、2…筐体本体、4…上蓋部、
5…カメラ筐体、8…液晶ディスプレイ、10…操作ボタン、
12…充電変換器、21…イヤースピーカ、25…ディスプレイカバー、
29…回転方向

【図6】

video camera

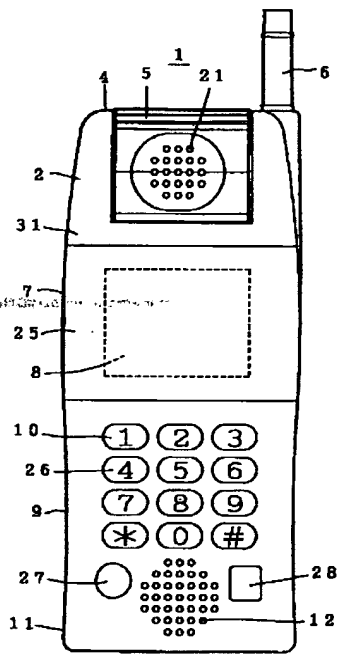


1…携帯電話一体型ビデオカメラ、2…筐体本体、5…カメラ筐体、
8…液晶ディスプレイ、10…操作ボタン、12…充電変換器、
14…電話基板、15…液晶表示基板、16…ビデオカメラ基板、
20…カメラヘッド部、21…イヤースピーカ、25…ディスプレイカバー、
29…回転方向

*handset-type
phone set*

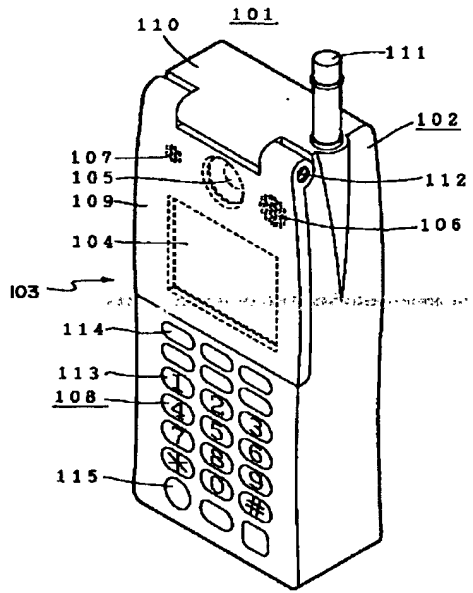
handset type
phone set

【図7】



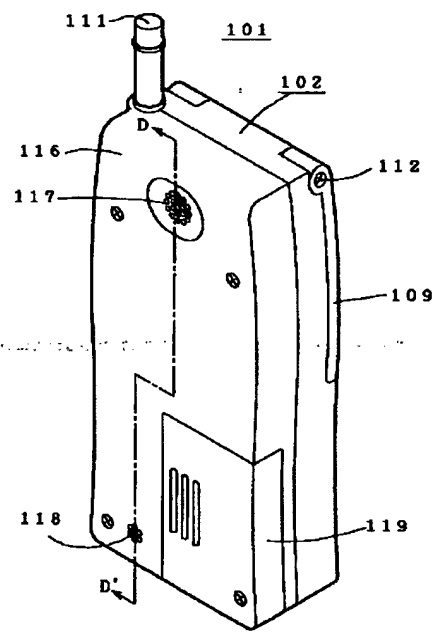
1…携帯電話一体型ビデオカメラ、2…筐体本体、4…上部部、
5…カメラ筐体、8…液晶ディスプレイ、10…操作ボタン、
12…動電圧変換器、21…イヤースピーカ、25…ディスプレイカバー

【図8】



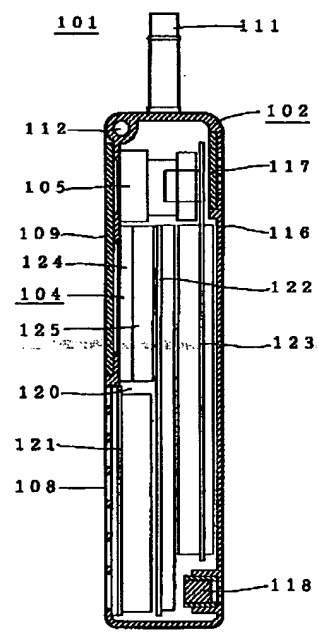
101…携帯電話一体型ビデオカメラ、102…筐体、
104…液晶ディスプレイ、105…カメラヘッド部、
106…スピーカ、107…マイク、109…フロントカバー、
112…蝶番

【図10】



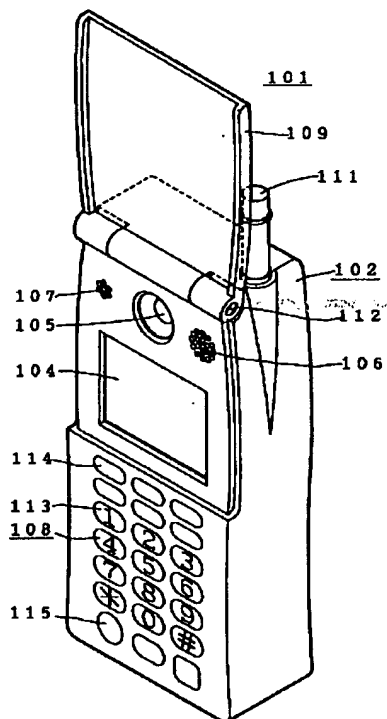
101…携帯電話一体型ビデオカメラ、102…筐体、
112…蝶番、117…イヤースピーカ、118…マイク

【図11】



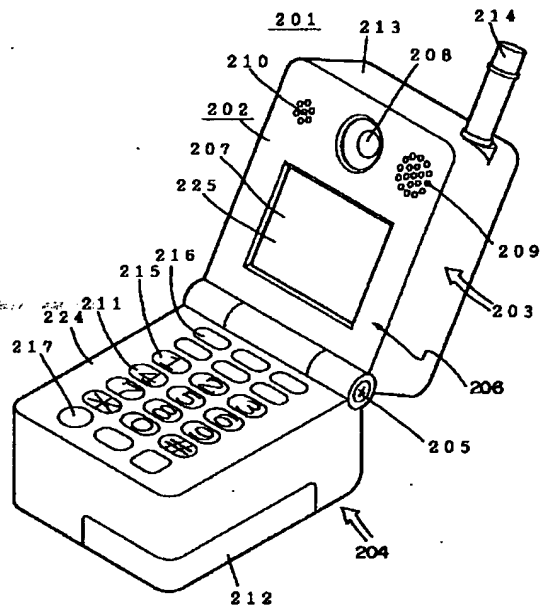
101…携帯電話一体型ビデオカメラ、102…筐体、
104…液晶ディスプレイ、105…カメラヘッド部、
109…フロントカバー、112…蝶番、117…イヤースピーカ、
118…マイク

【図9】

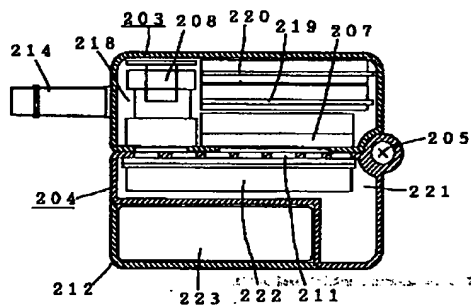


101…携帯電話一体型ビデオカメラ、102…筐体、
103…液晶ディスプレイ、104…カメラヘッド部、
105…スピーカ、106…マイク、107…フロントカバー、
108…受話器

【図12】



【図13】



フロントページの続き

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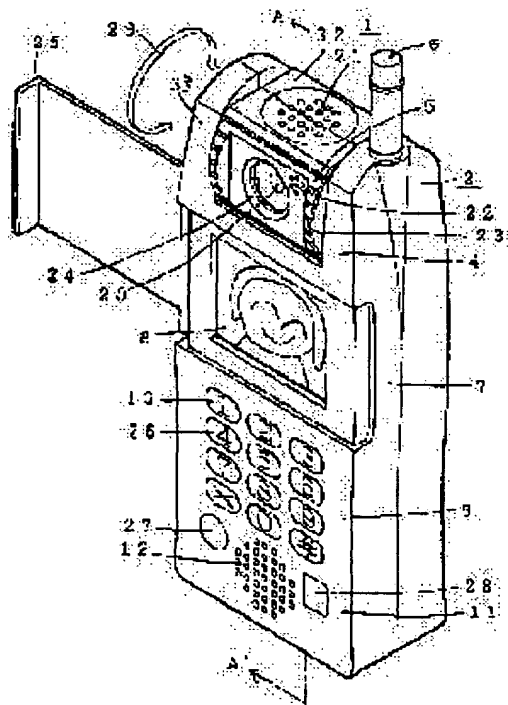
MATSUMOTO KUNIO

(54) VIDEO CAMERA INTEGRATED WITH PORTABLE TELEPHONE SET

(57)Abstract:

PURPOSE: To allow a video camera to be used by both a hand-free video telephone set and a handset telephone set while fingerprint and adhesion of dust are prevented.

CONSTITUTION: A transparent cover 25 is journaled by a casing main body 2 to cover a video camera section 20 or a video display section 8. Furthermore, a camera case 5 with a video input means (video camera section) 20, an ear speaker 21 and a microphone 22 mounted integrally above the casing main body 2 is journaled with a shaft (tilted). The video camera with portable telephone set is configured by arranging the video display section 8 to a breast 7 of the casing main body 2, an operation button 10 to a waste 9, and a dynamic acoustic converter 12 to a lower part 11. The video input means 20 and the ear speaker 21 are arranged on sides turned nearly by 90° mutually and when the ear speaker 21 is in use (in the operating state as a handset telephone set), the video input means 20 is detoured the inside



of the casing main body 2.

LEGAL STATUS

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CLAIMS

[Claim(s)]

[Claim 1] It is the cellular-phone one apparatus video camera with which a case comes to establish a loading portion of the graphic display section a wrap electric shielding means at least in a cellular-phone one apparatus video camera which carried in a case the video camera section which consists of a lens and an image sensor, the graphic display section, and a cellular-phone function part which carries out the wireless transmission and reception of the message signal of a telephone, enabling free closing motion.

[Claim 2] An electric shielding means is a cellular-phone one apparatus video camera according to claim 1 which it comes to consist of transparent materials.

[Claim 3] In a cellular-phone one apparatus video camera which carried in a case the video camera section which consists of a lens and an image sensor, the graphic display section, and a cellular-phone function part which carries out the wireless transmission and reception of the message signal of a telephone The 1st case with which a case carries a loudspeaker of the video camera section and a cellular-phone function part, While it has the 2nd case carrying a microphone of the graphic display section and a cellular-phone function part and the 1st case is supported to revolve by the 2nd case pivotable centering on a horizontal axis of the 2nd case A loudspeaker of the video camera section carried in the 1st case and a cellular-phone function part is a cellular-phone one apparatus video camera which it comes to arrange mutually in a location which carries out an abbreviation rectangular cross.

[Claim 4] It is the cellular-phone one apparatus video camera according to claim 3 which a cellular-phone function part has the 1st and the 2nd loudspeaker, and axial support of the 1st loudspeaker is carried out pivotable in the 1st case with the video camera section, and comes to arrange the 2nd loudspeaker to a lower limit of the 2nd case.

[Claim 5] The 2nd loudspeaker is a cellular-phone one apparatus video camera according to claim 4 which is an electrodynamic acoustic transducer.

[Claim 6] It is the cellular-phone one apparatus video camera according to claim 3 which is the 2nd inclined plane and **** inclined plane of a supporter of a case near [in which a supporter of the 2nd case which supports the 1st case has an inclined plane of 1 time thru/or 10 degrees, and the 1st loudspeaker of the 1st case was carried] the external surface.

[Claim 7] A cellular-phone function part is a cellular-phone one apparatus video camera according to claim 1 which has the 1st, the 2nd loudspeaker, the 1st, and the 2nd microphone, arranges the 1st loudspeaker and 1st microphone of a cellular-phone function part to a screen side of the graphic display section of a case, and comes to arrange the 2nd loudspeaker and 2nd microphone of a cellular-phone function part to the screen and the opposite side of the graphic display section of a case.

[Claim 8] In a cellular-phone one apparatus video camera which carried in a case the video camera section which consists of a lens and an image sensor, the graphic display section, a cellular-phone function part which carries out the wireless transmission and reception of the message signal of a telephone, a control unit, and a dc-battery A top case with which a case carries a loudspeaker and a microphone of the video camera section, the graphic display section, and a cellular-phone function part, It is the cellular-phone one apparatus video camera which superimposes the video camera section and

the graphic display section on a bottom case when a top case is rotated and it blockades, while consisting of a bottom case carrying a control unit and a dc-battery and connecting a top case and a bottom case mutually rotatable.

[Claim 9] A bottom case is a cellular-phone one apparatus video camera according to claim 8 used as susceptor of the video camera section carried in a top case.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the video camera which carries out the wireless transmission and reception of the image photoed especially in the video camera section using a cellular-phone function about the cellular-phone one apparatus video camera which carried in the case the video camera section which consists of a lens and an image sensor, the graphic display section, and the cellular-phone function part which carries out the wireless transmission and reception of the message signal of a telephone.

[0002]

[Description of the Prior Art] As this kind of a cellular-phone one apparatus video camera, there is "an electronic "still" camera with a cellular-phone function" currently indicated by JP,6-133081,A conventionally. By constituting the image which carried the cellular-phone function and was photoed to the digital electronic "still" camera possible [electrical transmission to the large-sized storage which is immediately in somewhere else using the telephone line], the configuration of the camera currently indicated has improved the sex instancy and has followed up the little (storage capacity is small) of the storage number of sheets of memory card. This camera has arranged the loudspeaker, the display, the dial control unit, and the microphone in the front face of a case, and arranged the lens and the antenna on the head side of a case.

[0003]

[Problem(s) to be Solved by the Invention] The lens which are some video cameras is fixing and arranging the above-mentioned conventional example in the case side, and the display which should serve as a finder is also the same, it is fixed to the front face of a case, and both are stationed mostly at the rectangular condition. For this reason, when using it as a handsfree telephone set which talks over the telephone while looking at a display, a sender's face could not be copied and consideration in the case of using it as a TV phone was not carried out. Moreover, since a loudspeaker and a display were on the same field of a case when using it as a usual hand-set telephone, when the ear was forced on the loudspeaker, the cheek contacted the display, the display side became dirty with the fats and oils of a cheek, and un-arranging [which causes image quality deterioration] arose.

[0004] Then, this invention offers the cellular-phone one apparatus video camera which can transmit and receive the clear image which image quality deterioration does not produce, when using it as a handsfree telephone set, and a sender's face can be copied and it uses it as a hand-set telephone set.

[0005]

[Means for Solving the Problem] In order to solve a technical problem of the above-mentioned conventional example, the video camera section which consists of a lens and an image sensor, the graphic display section, and a cellular-phone function part which carries out the wireless transmission and reception of the message signal of a telephone (a loudspeaker and microphone) are carried in a case, and a configuration which enables axial support of the closing motion of a wrap electric shielding means (it constitutes from a transparent material) of the graphic display section at a case is provided at least.

Moreover, it has the 1st case and the graphic display section which arrange and carry a loudspeaker of the video camera section and a cellular-phone function part in an abbreviation rectangular cross condition, and the 2nd case carrying a microphone, and the 1st case possesses a configuration supported to revolve pivotable centering on a horizontal axis of the 2nd case. Furthermore, you build two loudspeakers in a case and the 1st loudspeaker makes it rotate in one with the video camera section. A configuration which constitutes the 2nd loudspeaker from an electrodynamic acoustic transducer, and is arranged to a lower limit of a case, Moreover, a configuration which is the inclined plane whose loudspeaker loading sides of the 1st case are 1 time thru/or 10 degrees, The 1st loudspeaker or 1st microphone of a cellular-phone function part is arranged to a field in which the graphic display section of a case was carried, and a configuration which arranges the 2nd loudspeaker and 2nd microphone of a cellular-phone function part to a field in which the graphic display section was carried, and a field of the opposite side is provided.

[0006] Furthermore, it constitutes from a top case which has the video camera section and the graphic display section for a case, and a bottom case which has a control unit and a dc-battery, and a top case and a bottom case possess a configuration connected rotatable by hinge region.

[0007]

[Function] The electric shielding means supported by the case possible [closing motion] prevents adhesion of a cover, a fingerprint, and dust for the graphic display section at least, and the electric shielding means of transparence makes closing motion of covering unnecessary at the check of the contents of a display of images, such as the telephone number. since the ear receiver (loudspeaker) of the video camera section and a cellular phone function part be arrange by the 1st case in the abbreviation rectangular cross condition and axial support be carry out pivotable the center [the horizontal axis of the 2nd case] at it , when using a cellular phone one apparatus video camera as a hand set mold telephone set (operation which made the main part approach a head) , it prevent rotating the video camera section inside a case , covering a lens with a case , and a lens becoming dirty from the fats and oils of the hair . The electrodynamic acoustic transducer formed in the case lower limit acts as a sound collector (microphone), when using it as a hand-set mold telephone set, and on the other hand, in the case of the handsfree telephone set which separates a case from a head and uses it, this electrodynamic acoustic transducer acts as a vocal apparatus (loudspeaker).

[0008] Moreover, the loudspeaker section contacts an earlobe extensively along the inclination of a user's head, and the inclined plane of 1 time thru/or 10 degrees of the front rising wood of a case prevents the leakage of the sound from a loudspeaker, when it uses as a hand-set mold telephone set. When using it as a hand-set mold telephone set, the loudspeaker and microphone of a cellular-phone function part which have been arranged to the field in which the graphic display section of a case was carried, and the field of the opposite side prevent the dirt of the video camera section by the hair of hair, or the fats and oils of a cheek, or the graphic display section, and prevent deterioration of the control unit by the breath breathe out.

[0009] By folding up, the top case and bottom case which were combined mutually pivotable are that of a wrap in a bottom case about the video camera section and the graphic display section of a top case, and while protecting the video camera section and the graphic display section from adhesion of dust, a bottom case serves as susceptor of the video camera section.

[0010]

[Example] The example of this invention is explained in full detail with reference to a drawing.

1st example drawing 1 shows the whole perspective diagram showing the front face of a case of the cellular-phone one apparatus video camera of this example, and, as for drawing 5 , drawing 2 shows the whole condition from the A-A' cross section of drawing 1 , and drawing 3 , as for drawing 6 to the drawing of a busy condition, and drawing 8 . The cellular-phone one apparatus video camera 1 consists of the camera head section 20 carried in a case and a case, the liquid crystal display section 8, a telephone function part, etc. A case has the main part 2 of a case which is the 2nd case, and the camera case 5 which is the 1st case. The main part 2 of a case consists of the rising wood 4 in which an antenna 6 is attached, the case thorax 7 in which the liquid crystal display section 8 is carried, the case lumbar

part 9 which arranges a manual operation button 10, and the case lower part 11 in which the electric type-conversion machine 12 is carried, and carries out sequential arrangement from rising wood 4 to the case lower part 11. The front face 33 of case rising wood 4 is made to incline with the inclination of an angle θ . In this example, it may be $\theta = 5$ times. The manual operation button 10 of the case lumbar part 9 serves as the ten keys 26 from 0 to 9 for inputting the telephone number from the feature buttons 27 and 28, such as dispatch and termination. Inside [13] the main part 2 of a case, the telephone set substrate 14, the liquid crystal display substrate 15, and the video camera substrate 16 grade are arranged. Furthermore, a dc-battery 18 is built in the case lower limit posterior part 17, and it is covered with the dc-battery covering 19. Rising wood 4 forms a cavity in a part for a center section, and arranges the camera case 5. The camera case 5 fits into a part for the cavity of the rising wood 7 of the main part 2 of a case, and is arranged free [rotation].

[0011] The camera hole 24 is punched at the whole surface, and the camera case 5 carries the year loudspeaker 21 and a microphone 22 in the camera case 5 while arranging in the interior corresponding to the camera hole 24 the camera head section 20 which consists of a lens, an image sensor, etc. When the camera head section 20 has been arranged in camera hole 24 location used as the same field as a liquid crystal display 8, the year loudspeaker 21 is arranged in the location used as the field of the case rising wood 4 which arranges an antenna 6, and the same upper surface. That is, the arrangement side of the camera head section 20 and the arrangement side 32 of the year loudspeaker 21 intersect perpendicularly. In this example, a microphone 22 is arranged to the same field as the camera head section 20.

[0012] The arrangement side 32 of the year loudspeaker 21 is made to incline with the inclination of an angle θ . Case rising wood 4 front face is cut so that it may become flat-tapped with the year loudspeaker arrangement side 32, and few [the sound hole 34 neighborhood] depressions 35 are attached. That is, when the camera case 5 is rotated and the arrangement side 32 of the year loudspeaker 21 turns into the front face 3 of the main part 2 of a case, the front face of the rising wood 4 of the main part 2 of a case and the arrangement side 32 of the year loudspeaker 21 of the camera case 5 turn into the same inclined plane. θ is doubled with one angle of the earlobe and cheek which have been projected from the head thru/or 10 degrees in a body head whenever [this tilt-angle]. Since the arrangement side 32 of the year loudspeaker 21 agrees in the protrusion side of an earlobe and a cheek, the display covering 25 neighborhood contacts a cheek and the year loudspeaker 21 and an earlobe stick whenever [this tilt-angle] when using the cellular-phone one apparatus video camera 1 as a portable telephone, the leakage of the voice from the year loudspeaker 21 is reduced.

[0013] Moreover, as the whole main part 2 configuration of a case is shown in drawing 7, the case rising wood 4 in which the camera case 5 is arranged forms a loose radius of circle, and narrows. The case thorax 7 by which the display 8 has been arranged uses a part for a center section as the fuselage which gave the loose swelling, and the case lumbar part 9 by which the manual operation button 10 has been arranged forms a loose radius of circle, and narrows, and it makes the configuration of breadth the case lower part 11 by which the electrodynamic type converter 12 has been arranged at last. When using it as a portable telephone, it is easy to have this whole configuration, and it is not slipped down from in its hands. The knurling tool 23 for skids in the surface of the camera case 5 is carved. The electrodynamic type converter 12 is reversible equipment which a voice coil vibrates within the magnetic gap of a permanent magnet, a voice coil and the diaphragm of one will shake air and will become a loudspeaker if it consists of a diaphragm, a voice coil, and a permanent magnet and speech current is passed to a voice coil, speech current will utter to a voice coil if a diaphragm vibrates and a voice coil crosses a magnetic field within a magnetic gap with voice on the contrary, and serves as a microphone. The camera case 5 is supported to revolve in 270 degrees pivotable in the arrow head 29 direction with the liquid crystal display 8 in the rising wood 4 of the main part 2 of a case by setting the axis of rotation as a shaft parallel to horizontally it becomes settled uniquely.

[0014] In order to rotate the camera case 5 to the main part 2 of a case, the main part 2 of a case is supported with the left hand, and a liquid crystal display 8 is held at a legible angle, and by the right thumb and a right forefinger, it pinches camera case 5, and rotates, and whenever [angle-of-coverage /

of the camera head section 20] is set up. At this time, the knurling tool 23 of the camera case 5 acts a skid to rotation actuation. In the front face of the liquid crystal display 8 of the main part 2 of a case, the display covering 25 which can be opened and closed is supported to revolve pivotable by the main part 2 of a case. The display covering 25 is the transparent body, and after the display of a liquid crystal display 8 has carried out covering 25, it can be seen.

[0015] Thus, actuation of the cellular-phone one apparatus video camera 1 to constitute is explained.

(1) Use the cellular-phone one apparatus video camera 1 as a handsfree telephone set (refer to drawing 1). The camera case 5 is rotated and the camera head section 20 is turned to the front face 3 of a case. The display covering 25 can be opened so that the liquid crystal display 8 arranged in the front face 3 of a case can be faced squarely. A photograph is taken acting as the monitor of the photographic subject which exists in the operator [of the cellular-phone one apparatus video camera 1], or front-face 3 side of a case in the camera head section 20 with a liquid crystal display 8. The voice of a user's (photography person) etc. photographic subject collects a sound from the microphone phone 22 which adjoins the camera head section 20. On the other hand, the voice of the partner received by the cellular-phone function is reproduced from the electrodynamic type converter 12 arranged at the case lower part 11. In this case, the year loudspeaker 21 prepared in the camera case 5 shall not operate. The image of the side here which is going to transmit to a liquid crystal display 8 the image of the received partner and after this is displayed, and it can talk over the telephone, looking at an image.

[0016] (2) Use as video cameras in the case of photoing the photographic subject which exists behind the cellular-phone one apparatus video camera 1 etc. (refer to drawing 3 and drawing 4). When photoing the photographic subject which exists behind the cellular-phone one apparatus video camera 1, the camera case 5 is rotated in the arrow head 29 direction, and the camera head section 20 is turned to the case back 30. In this case, a liquid crystal display 8 acts as an electronic view finder. A user photos the photographic subject which exists behind a video camera 1, acting as a monitor with a liquid crystal display 8.

[0017] (3) Use the cellular-phone one apparatus video camera 1 as a hand-set mold portable telephone (refer to drawing 5 , drawing 6 , and drawing 7). The camera case 5 is rotated and let the year loudspeaker arrangement side 32 of the camera case 5 be the front face 3 of a case. At this time, the camera head section 20 serves as the inside of the main part 2 of a case, and the photography hole 24 hides in the interior 13 of a case. Therefore, fats and oils adhere and the photography hole 24 is protected from the main part 2 of a case serving as covering, a lens being protected, the hair contacting the lens of the camera head section 20, and dust adhering. Moreover, the power supply of the camera head section 20 is considered as the configuration cut automatically at this time. A liquid crystal display 8 closes and protects the display covering 25. The front face 33 of a case upper limb inclines with the inclination of an angle theta. In this example, it is $\theta = 5$ times. This is what doubled the 21st page of a loudspeaker with one angle of the earlobe and cheek which have been projected from the head thru/or 10 degrees, and the display covering 25 neighborhood contacts a cheek, the year loudspeaker 21 and an earlobe stick it, and he is trying to reduce the leakage of the voice from the year loudspeaker 21. The year loudspeaker arrangement side 32 is a plane omitted so that it might become flat-tapped with the front face 33 of a case upper limb, and few [the sound hole 34 neighborhood] depressions 35 are attached.

[0018] In the rising wood 4 of the camera case 5 with which the year loudspeaker 21 has been arranged, the main part 2 of a case of this example narrows. Since the case lower part 11 by which the case thorax 7 by which the display 8 has been arranged swelled, the case lumbar part 9 by which the manual operation button 10 has been arranged narrowed, and the electrodynamic type converter 12 has been arranged is made into the configuration of breadth at last If it has the case lumbar part 9 by hand, although a thorax 7 will lay on a hand and a hand will loosen, there is little risk of dropping the cellular-phone one apparatus video camera 1, and the safety of a pocket device improves. Moreover, the case lower part 11 of breadth has falling [little], since stability is well stable when the cellular-phone one apparatus video camera 1 is placed on a desk at last.

[0019] The whole cellular-phone one apparatus video camera 101 perspective diagram [in / in 2nd

example drawing 8 / this example] and drawing 9 are [rear view and drawing 11 of explanatory drawing of operation and drawing 10] drawing 10 line D-D' cross sections. In the front face 103 of the case 102 of the cellular-phone one apparatus video camera 101, a liquid crystal display 104, the camera head section 105, the 1st loudspeaker 106, the 1st microphone 107, the manual operation button 108, and the front cover 109 are arranged. The antenna 111 is arranged in the rising wood 110 of a case 102. The front cover 109 has covered a liquid crystal display 104, the camera head section 105, the 1st loudspeaker 106, and the 1st microphone 107. Axial support is carried out pivotable to the rising wood of a case 102 through the hinge 112, and a front cover 109 is taken as the configuration which can be held where a front cover 109 is extended. The front cover 109 consists of transparent materials, and also where a front cover 109 is shut, it can read the contents of an input of a feature button 108. A manual operation button 108 consists of a ten key 113, a top feature button 114, and a bottom feature button 115. The top feature button 114 has functions, such as memory, silence, and an identifier, and the bottom feature button 115 has functions, such as dispatch, a call, and termination.

[0020] The manual operation button 108, the cellular-phone substrate 121, the microphone 118, and the dc-battery (not shown) are arranged at the liquid crystal display 104 constituted from the liquid crystal panel 124 and back light 125 of a transparency mold by the camera head section 105 and the year loudspeaker 117, and pars intermedia from a upside antenna 111 arrangement portion inside [120] the case of the cellular-phone one apparatus video camera 101, the liquid crystal display substrate 122 and the video camera substrate 123, and the lower part. It is fixed to the case 102 and does not carry out movable [of the video camera section 105].

[0021] Drawing 9 shows the condition of having extended the front cover 109. When using it as a cellular phone of the handsfree mold which detaches and uses the cellular-phone one apparatus video camera 101 from a face, the voice input to the 1st microphone 106 and the voice output from the 1st loudspeaker 106 are possible by open Lycium chinense in a front cover 109. Moreover, a liquid crystal display 104 can be squarely faced without deterioration of image quality, without penetrating a front cover 109. Thus, as shown in the back of the cellular-phone one apparatus video camera 101 to constitute at drawing 10, the 2nd year loudspeaker 117, microphone 118, and dc-battery covering 119 are arranged at the case back 116. [2nd] When using this cellular-phone one apparatus video camera 101 as a cellular phone of a hand-set mold, an ear is applied for the 2nd year loudspeaker 117 on the back 116 of a case, and it is used, bringing opening close to the 2nd microphone 118.

[0022] 3rd example drawing 12 is the whole cellular-phone one apparatus video camera 201 perspective diagram, and drawing 13 is the cross section of a state of obstruction. The case 202 of the cellular-phone one apparatus video camera 201 consists of a top case 203 and a bottom case 204. The top case 203 and the bottom case 204 are connected on the hinge 205, and are pivotable to mutual. The top case 203 arranges a liquid crystal display 207, the camera head section 208, the loudspeaker 209, and the microphone 210 in the front face 206 of a case. Moreover, the antenna 214 is arranged in the rising wood 213 of the top case 203. A manual operation button 211 and the dc-battery covering 212 are arranged at the bottom case 204. A manual operation button 211 consists of a ten key 215, a top feature button 216, and a bottom feature button 217. The top feature button 216 has functions, such as memory, silence, and an identifier, and the bottom feature button 217 has functions, such as dispatch, a call, and termination. As the internal configuration of the cellular-phone one apparatus video camera 201 is shown in drawing 13, inside [218] the top case, the camera head section 208, the liquid crystal display 207, the liquid crystal display substrate 219, and the video camera substrate 220 are arranged from antenna 214 arrangement. Inside [221] the bottom case, the manual operation button 211, the telephone substrate 222, and the dc-battery 223 are arranged.

[0023] The cellular-phone one apparatus video camera 201 is placed on a desk, and when using it as a cellular phone of the handsfree mold detached and used from a face, the bottom case 204 is placed on a desk, the top case 203 is rotated and extended through a hinge 205, and it is used, setting a liquid crystal display 207 as a legible angle. In this busy condition, the bottom case 204 serves as susceptor of the top case 203 which arranges the camera head section 208. And at the time of un-using it, the top case 203 is bent on a hinge 205, and a polymerization is carried out on the bottom case 204 (condition of drawing

13). The camera head section 208 and the liquid crystal display 207 of the top case 203 are covered in the front face 224 of a bottom case in which the manual operation button 211 is arranged. Therefore, when carrying and carrying the cellular-phone one apparatus video camera 201, a finger can touch the graphic display side 225 of the lens of the video camera section 208, or a liquid crystal display 207, or it can protect from dust adhering.

[0024]

[Effect of the Invention] The cellular-phone one apparatus video camera of this invention has the following effects.

(1) Since the video camera section of a case and the graphic display section are prepared possible [closing motion of a wrap electric shielding means], the fingerprint to the lens [of the video camera section] and display top of the graphic display section and adhesion of dust can be prevented.

(2) Covering of the transparence of a case can check the contents of a display, such as the telephone number, with covering closed while preventing that the fats and oils of a cheek adhere to the graphic display section, when using as a hand-set mold telephone set.

(3) Since the camera case (the 1st case) which arranges the video camera section and a year loudspeaker to the main part of a case (the 2nd case) was supported to revolve pivotable, when using a cellular-phone one apparatus video camera as a hand-set mold telephone set, at the time of the non-busy condition of an image input means, a surroundings lump lens is covered for a video camera with a case in a case, and prevent the dirt of the lens by contact of a user's hair etc.

[0025] (4) Since the electrodynamic acoustic transducer which is reversible equipment arranged in a case lower limit can act as a sound collector (microphone) when using it as a hand-set mold telephone set, and it can be made to act as a vocal apparatus (loudspeaker) in the case of the handsfree telephone set which detaches and uses a case from a face on the other hand, the one arrangement number of a microphone can be excluded.

(5) Since the case rising wood of a cellular-phone one apparatus video camera was made into the inclination configuration of 1 time thru/or 10 degrees, when it uses as a hand-set mold telephone set, a year loudspeaker contacts an earlobe extensively and reduces the leakage of voice.

(6) The loudspeaker and microphone of a cellular-phone function part have been arranged to each of the field in which the graphic display section of a case was carried, and the field of the opposite side, when using it as a hand-set mold telephone set, the dirt of the video camera section by the hair of hair or the fats and oils of a cheek or the graphic display section was prevented, and deterioration of the control unit by the breath breathe out is prevented.

[0026] (7) By folding up at the time of un-using it, the cellular-phone one apparatus video camera which constitutes a top case and a bottom case rotatable can cover the arrangement side of the video camera section of a top case, and the above-mentioned graphic display section with a bottom case, and protects the video camera section and the graphic display section from adhesion of dust.

(8) When a top case and a bottom case are extended, a bottom case serves as susceptor of a top case which carries the camera head section, and makes camera actuation easy.

[Translation done.]

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TECHNICAL FIELD

[Industrial Application] This invention relates to the video camera which carries out the wireless transmission and reception of the image photoed especially in the video camera section using a cellular-phone function about the cellular-phone one apparatus video camera which carried in the case the video camera section which consists of a lens and an image sensor, the graphic display section, and the cellular-phone function part which carries out the wireless transmission and reception of the message signal of a telephone.

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PRIOR ART

[Description of the Prior Art] As this kind of a cellular-phone one apparatus video camera, there is "an electronic "still" camera with a cellular-phone function" currently indicated by JP,6-133081,A conventionally. By constituting the image which carried the cellular-phone function and was photoed to the digital electronic "still" camera possible [electrical transmission to the large-sized storage which is immediately in somewhere else using the telephone line], the configuration of the camera currently indicated has improved the sex instancy and has followed up the little (storage capacity is small) of the storage number of sheets of memory card. This camera has arranged the loudspeaker, the display, the dial control unit, and the microphone in the front face of a case, and arranged the lens and the antenna on the head side of a case.

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EFFECT OF THE INVENTION

[Effect of the Invention] The cellular-phone one apparatus video camera of this invention has the following effects.

- (1) Since the video camera section of a case and the graphic display section are prepared possible [closing motion of a wrap electric shielding means], the fingerprint to the lens [of the video camera section] and display top of the graphic display section and adhesion of dust can be prevented.
- (2) Covering of the transparence of a case can check the contents of a display, such as the telephone number, with covering closed while preventing that the fats and oils of a cheek adhere to the graphic display section, when using as a hand-set mold telephone set.
- (3) Since the camera case (the 1st case) which arranges the video camera section and a year loudspeaker to the main part of a case (the 2nd case) was supported to revolve pivotable, when using a cellular-phone one apparatus video camera as a hand-set mold telephone set, at the time of the non-busy condition of an image input means, a surroundings lump lens is covered for a video camera with a case in a case, and prevent the dirt of the lens by contact of a user's hair etc.
- [0025] (4) Since the electrodynamic acoustic transducer which is reversible equipment arranged in a case lower limit can act as a sound collector (microphone) when using it as a hand-set mold telephone set, and it can be made to act as a vocal apparatus (loudspeaker) in the case of the handsfree telephone set which detaches and uses a case from a face on the other hand, the one arrangement number of a microphone can be excluded.
- (5) Since the case rising wood of a cellular-phone one apparatus video camera was made into the inclination configuration of 1 time thru/or 10 degrees, when it uses as a hand-set mold telephone set, a year loudspeaker contacts an earlobe extensively and reduces the leakage of voice.
- (6) The loudspeaker and microphone of a cellular-phone function part have been arranged to each of the field in which the graphic display section of a case was carried, and the field of the opposite side, when using it as a hand-set mold telephone set, the dirt of the video camera section by the hair of hair or the fats and oils of a cheek or the graphic display section was prevented, and deterioration of the control unit by the breath breathe out is prevented.
- [0026] (7) By folding up at the time of un-using it, the cellular-phone one apparatus video camera which constitutes a top case and a bottom case rotatable can cover the arrangement side of the video camera section of a top case, and the above-mentioned graphic display section with a bottom case, and protects the video camera section and the graphic display section from adhesion of dust.
- (8) When a top case and a bottom case are extended, a bottom case serves as susceptor of a top case which carries the camera head section, and makes camera actuation easy.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] The lens which are some video cameras is fixing and arranging the above-mentioned conventional example in the case side, and the display which should serve as a finder is also the same, it is fixed to the front face of a case, and both are stationed mostly at the rectangular condition. For this reason, when using it as a handsfree telephone set which talks over the telephone while looking at a display, a sender's face could not be copied and consideration in the case of using it as a TV phone was not carried out. Moreover, since a loudspeaker and a display were on the same field of a case when using it as a usual hand-set telephone, when the ear was forced on the loudspeaker, the cheek contacted the display, the display side became dirty with the fats and oils of a cheek, and un-arranging [which causes image quality deterioration] arose.

[0004] Then, this invention offers the cellular-phone one apparatus video camera which can transmit and receive the clear image which image quality deterioration does not produce, when using it as a handsfree telephone set, and a sender's face can be copied and it uses it as a hand-set telephone set.

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MEANS

[Means for Solving the Problem] In order to solve a technical problem of the above-mentioned conventional example, the video camera section which consists of a lens and an image sensor, the graphic display section, and a cellular-phone function part which carries out the wireless transmission and reception of the message signal of a telephone (a loudspeaker and microphone) are carried in a case, and a configuration which enables axial support of the closing motion of a wrap electric shielding means (it constitutes from a transparent material) of the graphic display section at a case is provided at least. Moreover, it has the 1st case and the graphic display section which arrange and carry a loudspeaker of the video camera section and a cellular-phone function part in an abbreviation rectangular cross condition, and the 2nd case carrying a microphone, and the 1st case possesses a configuration supported to revolve pivotable centering on a horizontal axis of the 2nd case. Furthermore, you build two loudspeakers in a case and the 1st loudspeaker makes it rotate in one with the video camera section. A configuration which constitutes the 2nd loudspeaker from an electrodynamic acoustic transducer, and is arranged to a lower limit of a case, Moreover, a configuration which is the inclined plane whose loudspeaker loading sides of the 1st case are 1 time thru/or 10 degrees, The 1st loudspeaker or 1st microphone of a cellular-phone function part is arranged to a field in which the graphic display section of a case was carried, and a configuration which arranges the 2nd loudspeaker and 2nd microphone of a cellular-phone function part to a field in which the graphic display section was carried, and a field of the opposite side is provided.

[0006] Furthermore, it constitutes from a top case which has the video camera section and the graphic display section for a case, and a bottom case which has a control unit and a dc-battery, and a top case and a bottom case possess a configuration connected rotatable by hinge region.

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OPERATION

[Function] The electric shielding means supported by the case possible [closing motion] prevents adhesion of a cover, a fingerprint, and dust for the graphic display section at least, and the electric shielding means of transparency makes closing motion of covering unnecessary at the check of the contents of a display of images, such as the telephone number. since the ear receiver (loudspeaker) of the video camera section and a cellular phone function part be arrange by the 1st case in the abbreviation rectangular cross condition and axial support be carry out pivotable the center [the horizontal axis of the 2nd case] at it , when using a cellular phone one apparatus video camera as a hand set mold telephone set (operation which made the main part approach a head) , it prevent rotating the video camera section inside a case , covering a lens with a case , and a lens becoming dirty from the fats and oils of the hair . The electrodynamic acoustic transducer formed in the case lower limit acts as a sound collector (microphone), when using it as a hand-set mold telephone set, and on the other hand, in the case of the handsfree telephone set which separates a case from a head and uses it, this electrodynamic acoustic transducer acts as a vocal apparatus (loudspeaker).

[0008] Moreover, the loudspeaker section contacts an earlobe extensively along the inclination of a user's head, and the inclined plane of 1 time thru/or 10 degrees of the front rising wood of a case prevents the leakage of the sound from a loudspeaker, when it uses as a hand-set mold telephone set. When using it as a hand-set mold telephone set, the loudspeaker and microphone of a cellular-phone function part which have been arranged to the field in which the graphic display section of a case was carried, and the field of the opposite side prevent the dirt of the video camera section by the hair of hair, or the fats and oils of a cheek, or the graphic display section, and prevent deterioration of the control unit by the breath breathe out.

[0009] By folding up, the top case and bottom case which were combined mutually pivotable are that of a wrap in a bottom case about the video camera section and the graphic display section of a top case, and while protecting the video camera section and the graphic display section from adhesion of dust, a bottom case serves as susceptor of the video camera section.

[0010]

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EXAMPLE

[Example] The example of this invention is explained in full detail with reference to a drawing. 1st example drawing 1 shows the whole perspective diagram showing the front face of a case of the cellular-phone one apparatus video camera of this example, and, as for drawing 5, drawing 2 shows the whole condition from the A-A' cross section of drawing 1, and drawing 3, as for drawing 6 to the drawing of a busy condition, and drawing 8. The cellular-phone one apparatus video camera 1 consists of the camera head section 20 carried in a case and a case, the liquid crystal display section 8, a telephone function part, etc. A case has the main part 2 of a case which is the 2nd case, and the camera case 5 which is the 1st case. The main part 2 of a case consists of the rising wood 4 in which an antenna 6 is attached, the case thorax 7 in which the liquid crystal display section 8 is carried, the case lumbar part 9 which arranges a manual operation button 10, and the case lower part 11 in which the electric type-conversion machine 12 is carried, and carries out sequential arrangement from rising wood 4 to the case lower part 11. The front face 33 of case rising wood 4 is made to incline with the inclination of an angle θ . In this example, it may be $\theta = 5$ times. The manual operation button 10 of the case lumbar part 9 serves as the ten keys 26 from 0 to 9 for inputting the telephone number from the feature buttons 27 and 28, such as dispatch and termination. Inside [13] the main part 2 of a case, the telephone set substrate 14, the liquid crystal display substrate 15, and the video camera substrate 16 grade are arranged. Furthermore, a dc-battery 18 is built in the case lower limit posterior part 17, and it is covered with the dc-battery covering 19. Rising wood 4 forms a cavity in a part for a center section, and arranges the camera case 5. The camera case 5 fits into a part for the cavity of the rising wood 7 of the main part 2 of a case, and is arranged free [rotation].

[0011] The camera hole 24 is punched at the whole surface, and the camera case 5 carries the year loudspeaker 21 and a microphone 22 in the camera case 5 while arranging in the interior corresponding to the camera hole 24 the camera head section 20 which consists of a lens, an image sensor, etc. When the camera head section 20 has been arranged in camera hole 24 location used as the same field as a liquid crystal display 8, the year loudspeaker 21 is arranged in the location used as the field of the case rising wood 4 which arranges an antenna 6, and the same upper surface. That is, the arrangement side of the camera head section 20 and the arrangement side 32 of the year loudspeaker 21 intersect perpendicularly. In this example, a microphone 22 is arranged to the same field as the camera head section 20.

[0012] The arrangement side 32 of the year loudspeaker 21 is made to incline with the inclination of an angle θ . Case rising wood 4 front face is cut so that it may become flat-tapped with the year loudspeaker arrangement side 32, and few [the sound hole 34 neighborhood] depressions 35 are attached. That is, when the camera case 5 is rotated and the arrangement side 32 of the year loudspeaker 21 turns into the front face 3 of the main part 2 of a case, the front face of the rising wood 4 of the main part 2 of a case and the arrangement side 32 of the year loudspeaker 21 of the camera case 5 turn into the same inclined plane. θ is doubled with one angle of the earlobe and cheek which have been projected from the head thru/or 10 degrees in a body head whenever [this tilt-angle]. Since the arrangement side 32 of the year loudspeaker 21 agrees in the protrusion side of an earlobe and a cheek, the display

covering 25 neighborhood contacts a cheek and the year loudspeaker 21 and an earlobe stick whenever [this tilt-angle] when using the cellular-phone one apparatus video camera 1 as a portable telephone, the leakage of the voice from the year loudspeaker 21 is reduced.

[0013] Moreover, as the whole main part 2 configuration of a case is shown in drawing 7, the case rising wood 4 in which the camera case 5 is arranged forms a loose radius of circle, and narrows. The case thorax 7 by which the display 8 has been arranged uses a part for a center section as the fuselage which gave the loose swelling, and the case lumbar part 9 by which the manual operation button 10 has been arranged forms a loose radius of circle, and narrows, and it makes the configuration of breadth the case lower part 11 by which the electrodynamic type converter 12 has been arranged at last. When using it as a portable telephone, it is easy to have this whole configuration, and it is not slipped down from in its hands. The knurling tool 23 for skids in the surface of the camera case 5 is carved. The electrodynamic type converter 12 is reversible equipment which a voice coil vibrates within the magnetic gap of a permanent magnet, a voice coil and the diaphragm of one will shake air and will become a loudspeaker if it consists of a diaphragm, a voice coil, and a permanent magnet and speech current is passed to a voice coil, speech current will utter to a voice coil if a diaphragm vibrates and a voice coil crosses a magnetic field within a magnetic gap with voice on the contrary, and serves as a microphone. The camera case 5 is supported to revolve in 270 degrees pivotable in the arrow head 29 direction with the liquid crystal display 8 in the rising wood 4 of the main part 2 of a case by setting the axis of rotation as a shaft parallel to horizontally it becomes settled uniquely.

[0014] In order to rotate the camera case 5 to the main part 2 of a case, the main part 2 of a case is supported with the left hand, and a liquid crystal display 8 is held at a legible angle, and by the right thumb and a right forefinger, it pinches camera case 5, and rotates, and whenever [angle-of-coverage / of the camera head section 20] is set up. At this time, the knurling tool 23 of the camera case 5 acts a skid to rotation actuation. In the front face of the liquid crystal display 8 of the main part 2 of a case, the display covering 25 which can be opened and closed is supported to revolve pivotable by the main part 2 of a case. The display covering 25 is the transparent body, and after the display of a liquid crystal display 8 has carried out covering 25, it can be seen.

[0015] Thus, actuation of the cellular-phone one apparatus video camera 1 to constitute is explained.

(1) Use the cellular-phone one apparatus video camera 1 as a handsfree telephone set (refer to drawing 1). The camera case 5 is rotated and the camera head section 20 is turned to the front face 3 of a case. The display covering 25 can be opened so that the liquid crystal display 8 arranged in the front face 3 of a case can be faced squarely. A photograph is taken acting as the monitor of the photographic subject which exists in the operator [of the cellular-phone one apparatus video camera 1], or front-face 3 side of a case in the camera head section 20 with a liquid crystal display 8. The voice of a user's (photography person) etc. photographic subject collects a sound from the microphone phone 22 which adjoins the camera head section 20. On the other hand, the voice of the partner received by the cellular-phone function is reproduced from the electrodynamic type converter 12 arranged at the case lower part 11. In this case, the year loudspeaker 21 prepared in the camera case 5 shall not operate. The image of the side here which is going to transmit to a liquid crystal display 8 the image of the received partner and after this is displayed, and it can talk over the telephone, looking at an image.

[0016] (2) Use as video cameras in the case of photoing the photographic subject which exists behind the cellular-phone one apparatus video camera 1 etc. (refer to drawing 3 and drawing 4). When photoing the photographic subject which exists behind the cellular-phone one apparatus video camera 1, the camera case 5 is rotated in the arrow head 29 direction, and the camera head section 20 is turned to the case back 30. In this case, a liquid crystal display 8 acts as an electronic view finder. A user photos the photographic subject which exists behind a video camera 1, acting as a monitor with a liquid crystal display 8.

[0017] (3) Use the cellular-phone one apparatus video camera 1 as a hand-set mold portable telephone (refer to drawing 5, drawing 6, and drawing 7). The camera case 5 is rotated and let the year loudspeaker arrangement side 32 of the camera case 5 be the front face 3 of a case. At this time, the camera head section 20 serves as the inside of the main part 2 of a case, and the photography hole 24

hides in the interior 13 of a case. Therefore, fats and oils adhere and the photography hole 24 is protected from the main part 2 of a case serving as covering, a lens being protected, the hair contacting the lens of the camera head section 20, and dust adhering. Moreover, the power supply of the camera head section 20 is considered as the configuration cut automatically at this time. A liquid crystal display 8 closes and protects the display covering 25. The front face 33 of a case upper limb inclines with the inclination of an angle θ . In this example, it is $\theta = 5$ times. This is what doubled the 21st page of a loudspeaker with one angle of the earlobe and cheek which have been projected from the head thru/or 10 degrees, and the display covering 25 neighborhood contacts a cheek, the year loudspeaker 21 and an earlobe stick it, and he is trying to reduce the leakage of the voice from the year loudspeaker 21. The year loudspeaker arrangement side 32 is a plane omitted so that it might become flat-tapped with the front face 33 of a case upper limb, and few [the sound hole 34 neighborhood] depressions 35 are attached.

[0018] In the rising wood 4 of the camera case 5 with which the year loudspeaker 21 has been arranged, the main part 2 of a case of this example narrows. Since the case lower part 11 by which the case thorax 7 by which the display 8 has been arranged swelled, the case lumbar part 9 by which the manual operation button 10 has been arranged narrowed, and the electrodynamic type converter 12 has been arranged is made into the configuration of breadth at last If it has the case lumbar part 9 by hand, although a thorax 7 will lay on a hand and a hand will loosen, there is little risk of dropping the cellular-phone one apparatus video camera 1, and the safety of a pocket device improves. Moreover, the case lower part 11 of breadth has falling [little], since stability is well stable when the cellular-phone one apparatus video camera 1 is placed on a desk at last.

[0019] The whole cellular-phone one apparatus video camera 101 perspective diagram [in / in 2nd example drawing 8 / this example] and drawing 9 are [rear view and drawing 11 of explanatory drawing of operation and drawing 10] drawing 10 line D-D' cross sections. In the front face 103 of the case 102 of the cellular-phone one apparatus video camera 101, a liquid crystal display 104, the camera head section 105, the 1st loudspeaker 106, the 1st microphone 107, the manual operation button 108, and the front cover 109 are arranged. The antenna 111 is arranged in the rising wood 110 of a case 102. The front cover 109 has covered a liquid crystal display 104, the camera head section 105, the 1st loudspeaker 106, and the 1st microphone 107. Axial support is carried out pivotable to the rising wood of a case 102 through the hinge 112, and a front cover 109 is taken as the configuration which can be held where a front cover 109 is extended. The front cover 109 consists of transparent materials, and also where a front cover 109 is shut, it can read the contents of an input of a feature button 108. A manual operation button 108 consists of a ten key 113, a top feature button 114, and a bottom feature button 115. The top feature button 114 has functions, such as memory, silence, and an identifier, and the bottom feature button 115 has functions, such as dispatch, a call, and termination.

[0020] The manual operation button 108, the cellular-phone substrate 121, the microphone 118, and the dc-battery (not shown) are arranged at the liquid crystal display 104 constituted from the liquid crystal panel 124 and back light 125 of a transparency mold by the camera head section 105 and the year loudspeaker 117, and pars intermedia from a upside antenna 111 arrangement portion inside [120] the case of the cellular-phone one apparatus video camera 101, the liquid crystal display substrate 122 and the video camera substrate 123, and the lower part. It is fixed to the case 102 and does not carry out movable [of the video camera section 105].

[0021] Drawing 9 shows the condition of having extended the front cover 109. When using it as a cellular phone of the handsfree mold which detaches and uses the cellular-phone one apparatus video camera 101 from a face, the voice input to the 1st microphone 106 and the voice output from the 1st loudspeaker 106 are possible by open Lycium chinense in a front cover 109. Moreover, a liquid crystal display 104 can be squarely faced without deterioration of image quality, without penetrating a front cover 109. Thus, as shown in the back of the cellular-phone one apparatus video camera 101 to constitute at drawing 10, the 2nd year loudspeaker 117, microphone 118, and dc-battery covering 119 are arranged at the case back 116. [2nd] When using this cellular-phone one apparatus video camera 101 as a cellular phone of a hand-set mold, an ear is applied for the 2nd year loudspeaker 117 on the

back 116 of a case, and it is used, bringing opening close to the 2nd microphone 118.

[0022] 3rd example drawing 12 is the whole cellular-phone one apparatus video camera 201 perspective diagram, and drawing 13 is the cross section of a state of obstruction. The case 202 of the cellular-phone one apparatus video camera 201 consists of a top case 203 and a bottom case 204. The top case 203 and the bottom case 204 are connected on the hinge 205, and are pivotable to mutual. The top case 203 arranges a liquid crystal display 207, the camera head section 208, the loudspeaker 209, and the microphone 210 in the front face 206 of a case. Moreover, the antenna 214 is arranged in the rising wood 213 of the top case 203. A manual operation button 211 and the dc-battery covering 212 are arranged at the bottom case 204. A manual operation button 211 consists of a ten key 215, a top feature button 216, and a bottom feature button 217. The top feature button 216 has functions, such as memory, silence, and an identifier, and the bottom feature button 217 has functions, such as dispatch, a call, and termination. As the internal configuration of the cellular-phone one apparatus video camera 201 is shown in drawing 13, inside [218] the top case, the camera head section 208, the liquid crystal display 207, the liquid crystal display substrate 219, and the video camera substrate 220 are arranged from antenna 214 arrangement. Inside [221] the bottom case, the manual operation button 211, the telephone substrate 222, and the dc-battery 223 are arranged.

[0023] The cellular-phone one apparatus video camera 201 is placed on a desk, and when using it as a cellular phone of the handsfree mold detached and used from a face, the bottom case 204 is placed on a desk, the top case 203 is rotated and extended through a hinge 205, and it is used, setting a liquid crystal display 207 as a legible angle. In this busy condition, the bottom case 204 serves as susceptor of the top case 203 which arranges the camera head section 208. And at the time of un-using it, the top case 203 is bent on a hinge 205, and a polymerization is carried out on the bottom case 204 (condition of drawing 13). The camera head section 208 and the liquid crystal display 207 of the top case 203 are covered in the front face 224 of a bottom case in which the manual operation button 211 is arranged. Therefore, when carrying and carrying the cellular-phone one apparatus video camera 201, a finger can touch the graphic display side 225 of the lens of the video camera section 208, or a liquid crystal display 207, or it can protect from dust adhering.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The 1st whole example perspective diagram of this invention.

[Drawing 2] The A-A' cross section of drawing 1 .

[Drawing 3] Explanatory drawing of drawing 1 of operation.

[Drawing 4] The B-B' cross section of drawing 3 .

[Drawing 5] Explanatory drawing of drawing 1 of operation.

[Drawing 6] The C-C' cross section of drawing 5 .

[Drawing 7] Front view of drawing 5 .

[Drawing 8] The 2nd whole example perspective diagram of this invention.

[Drawing 9] Explanatory drawing of drawing 8 of operation.

[Drawing 10] The perspective diagram from the rear face of drawing 8 .

[Drawing 11] The D-D' cross section of drawing 10 .

[Drawing 12] The 3rd whole example perspective diagram of this invention.

[Drawing 13] The central cross section of drawing 12 .

[Description of Notations]

1,101,201 Cellular-phone one apparatus video camera

2,102,202 Main part of a case

4,110,213 Rising wood

5 Camera Case

8,104,207 Liquid crystal display

10,108,211 Manual operation button

12 Electrodynamic Acoustic Transducer

20,105,208 Camera head section

21,117 Year loudspeaker

22,107,118,210 Microphone

25 Display Covering

109 Front Cover

106,209 Loudspeaker

[Translation done.]